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ABSTRACT

Based on the working papers and the results of seminar discussions on the evaluation of vocational education in various European countries, this volume summarizes current European thinking on the evaluation of training programs. Chapter 1 describes and defines the different levels of analysis which can be used in evaluation: analysis in the domains of socioeconomic policy, manpower policy, training policy, and evaluation within the training program itself. Chapter 2 deals with evaluation within the various domains, i.e., the evaluation of training programs. Chapter 3 covers evaluation within the training programs, e.g., the assessment of trainees and of teaching methods. Chapter 4 discusses cost benefit analysis techniques as applied to vocational training. Chapter 5 presents an overview of evaluation and its practical implementation. A number of papers follow the overview given in each chapter, selected to give practical examples of the theoretical discussion. (JT)

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COMMISSION OF THE EUROPEAN COMMUNITIES

THE EVALUATION OF VOCATIONAL TRAINING

Report of a seminar held in the University of Manchester
UNITED KINGDOM – JANUARY 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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OPENING ADDRESS BY Dr. P.J. HILLERY,
VICE-PRESIDENT, EUROPEAN COMMISSION.

I would like warmly to welcome the delegates on behalf of the Commission. I would especially like to thank the delegates and experts who have participated in the preparatory meetings for this seminar and those who have prepared the national review papers, the case studies and the lead papers.

We are witnessing an unprecedended expansion in vocational training facilities in all the Member States of the Community.

In Britain, our host country for this week, direct public expenditure on training has gone up from £ 30 million in 1968 to £ 85 million in 1974, with the number of Government Training Centres rising from 13 in 1963 to over 50 in 1974.

In France, the number of trainees helped by public expenditure has almost doubled from 560.000 in 1969 to 920.000 in 1974. This explosive growth could just as easily be illustrated by figures from the other Member States where direct public expenditure on vocational training now runs at between one and two per cent of the national budget.

Data on public expenditure is only the tip of the iceberg. To training provided or supported by the state we must add the greatly expanded in-company training activities of industry and the spread of university courses with a direct vocational orientation.

The importance of training springs from recognition of the necessity of an active employment policy. Several factors have contributed to this recognition.

Firstly, the pace of economic growth and development since the war has called for a high level of labour mobility - both professional and geographical. It has been estimated that at least one worker in eight will change his profession in the next ten years and that over two million Europeans will leave the land over the same period.

Secondly, there has been a recognition of the right of every worker and of every category of worker to be trained and given employment to the full extent of his or her own capacity and talent. This is exemplified in Germany's employment promotion act of 1971 or the French law on the organisation of permanent vocational training. These give each individual the statutory right to undertake training courses with the assistance of state grants.

The growing participation of women in employment has called for a system of training suited to their particular needs. It is recognised in all the member states that much has still to be done to improve the employment position and opportunities of certain groups - in particular women, migrant workers and the handicapped.

As Commissioner for Social Affairs I have initiated Community measures to encourage the member states to tackle the most urgent problems facing these underprivileged groups. Clearly effective programmes of vocational training will also have a very important role in these developments.

Thirdly, there has been an increased understanding of the significance of vocational training in fulfilling other economic and social goals. For example the achievement of planned regional development calls for carefully thought-out vocational training in order to adapt the manpower and womanpower of the regions to the needs of industries and enterprises. Again, the high levels of employment, which we have enjoyed until recently, entailed high levels of inflation, caused to some extent by specific manpower shortages. An active manpower policy, involving vocational retraining, has contributed substantially to reducing inflation while still enabling a high level of employment to be enjoyed. Faced as we are with growing inflation, unemployment and the structural changes caused by the rise in the price of energy and raw materials, the need for an active and vigorous manpower policy becomes even more crucial. Vocational retraining is not a pass-time for the unemployed ; it is a prerequisite for continued economic development.

The Commission of the European Communities has kept apace with and sought to initiate, supplement and extend vocational training.

Through the European Social Fund it has been intimately connected with the training effort in the different

member states, with the defining of common training needs and with the coordination of national training policies. The growth of the Fund has been remarkable to the point where it now has an annual budget of some 150 m. and where in 1973 Social Fund monies going to Britain for example, represented 40 % of direct spending on vocational training by the Department of Employment in Britain. The introduction of the Regional Fund will give the Commission a further instrument in combatting employment problems.

The Social Fund gives special emphasis to the training of workers from less developed regions, to agricultural and textile workers, and to programmes for the handicapped and migrant workers. The overriding policy-aim however is to assist genuinely promotional and innovative programmes as well as raising the standard of training provided.

In this context I am pleased to refer to the recent decision of the Council of Ministers to establish the European Vocational Centre as proposed by the Commission. The role of this centre will be to coordinate research into various aspects of training and carry out its own specific projects. It will also organize courses and seminars and will establish a selective documentation centre on vocational training. The centre will be managed by a Committee composed of representatives of the Commission, the Member States and the Trade-Unions and employers. This will be the first time the social partners will be involved in the active management of a European Institution. This is a very welcome development.

This seminar on the Evaluation of Vocational Training comes at a very opportune time. It provides an opportunity for senior training officials from the member countries to come together to exchange their ideas and experiences, to identify common problems and to work together to resolve them. Vocational training is now serving a wide variety of goals and as a result its evaluation has become increasingly complex. Perhaps as result of the variety of bodies concerned, and of the rapid growth in training, programmes have not always been well thought out or have not achieved the results hoped for. Expansion may have leapt ahead of the application of techniques of evaluation.

The task of the seminar is to make this complexity

manageable for officials and others who must take decisions about the scale, design and implementation of training programmes, and who must ensure the quality of the training.

The seminar will begin with an overall view of the development of the social and economic role of training ; the participants will then discuss papers dealing with the uses and problems of cost-benefit techniques as applied to training programmes. The measurement of non-monetary variables, such as the impact of training on adaptability, and the confidence of trainees, are also considered in a series of papers. Various techniques of gathering information about the outcome of specific training courses, especially on their impact on the long term career opportunities, are presented for discussion. This is in keeping with the emphasis on training as a stage, or a series of stages, in the career of each worker.

The issues which you will be discussing in the coming week are of great importance. All of us who are involved in vocational training have the responsibility and the challenge of ensuring that the training carried out in the Community is effective, in that it takes account of the potential and the capabilities of the trainees, that it uses the best techniques for teaching and that the training provided is matched to job-opportunities. Finally, if this training is to be delivered to as many workers as possible it must be cost-effective.

The Commission intends to develop its work in the area of vocational training and I am confident that the results of this seminar will be very significant for the development of techniques of evaluation. I will be following with great interest the proceedings and the recommendations of this seminar.

I wish you well in your work.

INTRODUCTION

As an instrument of economic policy generally and employment policy in particular vocational training has come to play an increasingly important role in the member states of the Community.

Alongside with the growth and expansion in training outlined in the opening speech of Dr. Hillery, most countries have implemented substantial and far-reaching reorganisation of their systems of vocational training in recent years. This was in part a response to the fact that as a result of the variety of bodies concerned, and of the rapid growth in training, programmes have not always been well thought out or have not achieved the results hoped for.

These developments have led to the demand for more adequate systems and concepts of evaluation of vocational training. The evaluation of vocational training is not a new science, but rather involves an attempt to (i) map out and to organise the different elements involved in the exercise of evaluating a given training programme(ii) to apply the findings and concepts of relevant sciences e.g. economics, organisational theory, psychology of learning etc.

Evaluation can be used (i) to help in the control and management of what has a substantial and complex activity (ii) to provide information for decisions on the future scale and orientation of training. Its significance has become particularly crucial in the light of the current employment crisis. The number of persons unemployed in the Member States of the Community doubled in 1974 and has been continually increasing throughout most of 1975. This crisis has lead to a searching reappraisal of employment policies and of the appropriate strategy and role for training. Should additional public expenditure be devoted to training or rather to job-creation ? What sort of training can be given to young persons in order to improve their chances of access to employment ?

How important is the placement rate in the assessment of the success of a training programme ?

Unfortunately neither the policy makers of the Member States, nor of training organisations within member states are in a position to begin to answer questions of this kind. The explanation for this unsatisfactory

state of affairs can be found in the rapid growth of training, the recent birth of new training organisation, and the inherent difficulty in conceptualisy and organisating evaluation systems.

The Commission of the European Communities has been closely watching the development of this situation particularly through its experience with the European Social Fund. In Autumn 1974 it requested a number of brief reports on the situation as regards evaluation in the Member States of the Community. A fairly consistend picture emerged of

(i) recognition of the importance of evaluation

(ii) extreme practical difficulty in implementation

(iii) a number of initiatives in the field, usually consequent upon reorganisation of vocational training systems.

Some extracts from the reports are :

"The balance sheet which can be currently established is fairly thin" (France)

"With regard to routine training intended for young people it is even less opportune to specify that there is no classified control system, especially as there is no specific initial plan" (Italy)

"Thanks to the Training Services Agency there is, for the first time in the United Kingdom, the means to provide an overall view and to define a global strategy for the vocational training system... The rationalisation of budgetary choice set up by the Agency in the preparation of its objectives will allow the establishment of evaluation criteria" (United Kingdom)

"It is difficult to form a complete picture of the whole area of further vocational training.

"There is no methodological apparatus by which the value of training schemes within undertakings can be gauged.

"The information available is a little out of date." (Germany)

As part of its role in stimulating the interchange of ideas on common problems and encouraging the spread of best practices, the Directorate-General for Social

Affairs organised a seminar on the subject in Manchester University in January 1975. The seminar participants were some 60 training experts with responsibilities for the activation and management of continual vocational training measures (or, if such be the case, research in the field of training) in private or public institutions, in companies and in employers' and employees' organisations, representing all 9 member-states.

The Seminar programme was designed to provide maximum opportunity for all participants to contribute ideas and information based on their own experience. After an initial session in which experts presented papers in plenary session, the seminar divided into small working groups in order to discuss the issues which had been raised and to produce their own reports and recommendations. To facilitate productive discussion, the groups were assigned to one of three topic areas :

(i) The evaluation of training programmes at national or sectoral level, including the considerations which should inform training policy decisions and the role of cost-benefit analysis

(ii) The evaluation of the training scheme itself, e.g. methods of selection, course design and planning, teaching methods and control measures

(iii) The evaluation of employment outcomes with respect to the impact on the labour market as a whole and on the particular individuals who receive training.

Appropriate case studies were provided for each working group to serve as a focus for discussion. Group reports were not necessarily tied to the problems presented in their case studies.

There followed plenary sessions in which the group's reports were presented and discussed, two separate groups reporting on each topic area so that differing considerations could be developped and compared.

The present volume is based on the working papers and the results of the discussions held at the seminar.

This volume is in five chapters.

Chapter 1 describes and defines the different levels of analysis which can be used in evaluation. They are : analysis in the domains of socio-economic policy, manpower policy, training policy, evaluation within the training programme itself.

Chapter 2 deals with evaluation within the various domains i.e. the evaluation of training programmes.

Chapter 3 covers evaluation within the training programme e.g. the assessment of trainees and of teaching methods.

Chapter 4 discusses Cost-Benefit Analysis techniques as applied to Vocational Training.

Finally
Chapter 5 presents an Overview of Evaluation and its Practical Implementation.

A number of papers follow the overview given in each chapter. Their aim is to give practical examples of the more theoretical discussions in the text. Sometimes however they develop in greater detail, or present under a different form some of the ideas contained in the main text.

CHAPTER 1

THE DOMAINS OF EVALUATION

In this chapter we shall consider the various levels of analysis into which different aspects of the training system may be ordered. The problems of evaluation would seem to divide into :

1. Methods of assessing learning

2. Methods of assessing the effect of learning in terms of task performance

3. Methods of assessing the employment outcome for the individual

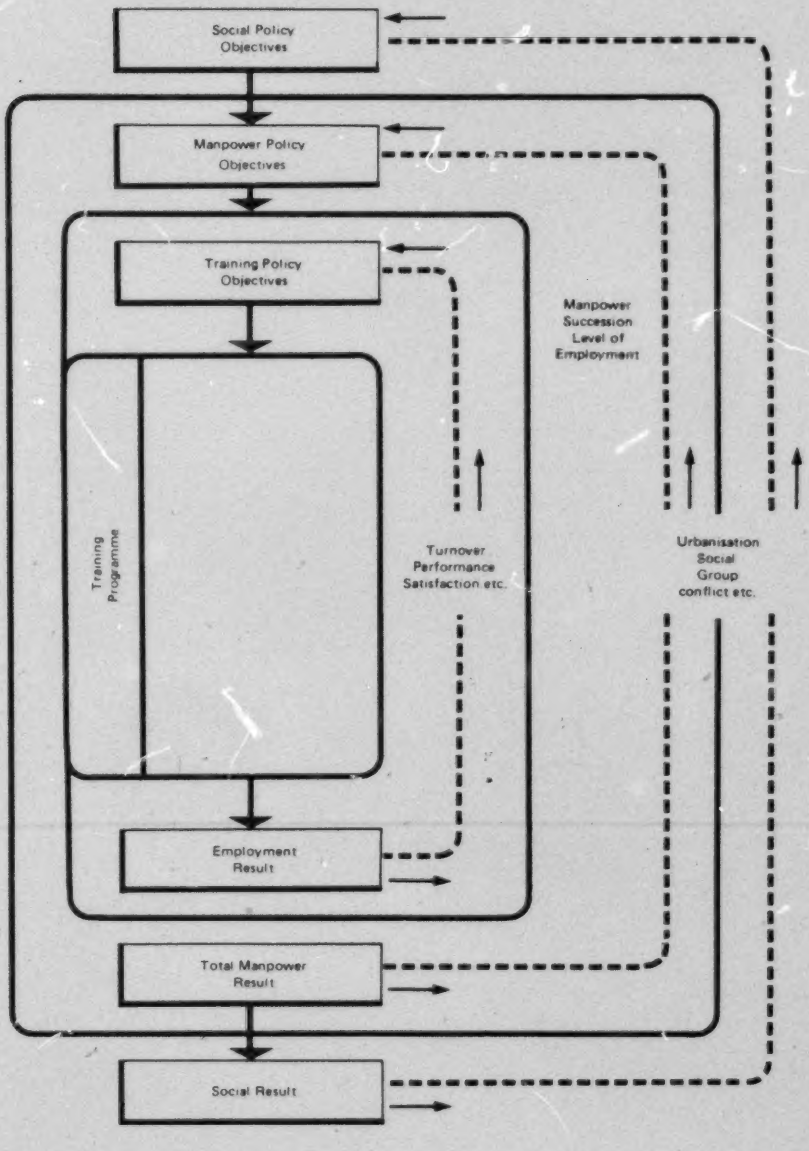
4. Methods of assessing the impact on the employment situation as a whole

5. Methods of assessing the broad socio-economic outcome.

Thus at the most specific level are the particular teaching/learning systems through which skills are developed. Here a considerable body of systematic technique has been developed during the last thirty years, and the process of evaluation must reflect this. Beyond the immediate learning situation are the worlds of work and employment out of which training activities ultimately flow. While recognising the integration of these different levels, it is helpful to distinguish between them at least initially in order to keep the practical task of evaluation within reasonable bounds.

The accompanying diagram (fig.1) represents the field as a series of embedded elements : the system for controlling a training programme is embedded within the domain of training policy ; the system for controlling training policy is embedded within the domain of manpower policy ; and the manpower policy system is embedded within the domain of socio-economic policy. Evaluation can thus be seen as the operation of the various feedback loops (the diagram has been restricted to showing only the principal, formal loops).

Diagram 1


Social Policy Objectives
Manpower Policy Objectives
Training Policy Objectives
Manpower Succession Level of Employment
Training Programme
Turnover Performance Satisfaction etc.
Urbanisation Social Group conflict etc.
Employment Result
Total Manpower Result
Social Result

Generally speaking, evaluation follows a time sequence across the different domains. Within the innermost domain, feedback on the effectiveness of learning operates quickly - within days or a few weeks - while the feedback of information concerning employment outcomes may well take months as a minimum. At the level of the manpower domain the relevant information may not become available for years, and this represents a severe limitation on research in this area. There is also a clear tendency for the feedback data to be harder to define and to obtain as the larger domains are approached. By comparison, the dimensions of relevant outcomes are easier to predict in the internal evaluation of a training programme since the situation is more confined. But as outcomes develop into the larger domains they interact with more variables over a larger period of time. The result is that the evaluation researcher is uncertain about what date to pursue. He is less able to seek answers to pre-determined questions and more constrained to wonder what questions he should be asking. The difficulty shows clearly in the units of evaluation which are appropriate to each domain. These may be represented hierarchically as :

1. factors in life				
2. factors in work				Socio-
3. factors in careers			Man-	
4. factors in employment		Training	power	Economic
5. factors in skills	Training	ning	policy	policy
6. factors in operations	programme	policy		

Typically, the various domains of control have as indicated concerned themselves with particular groups of factors. In a static situation, this type of division of labour may present no particular problem. But the present need is for training to play a part in the management of change, and to do this effectively the different levels need to be integrated in practice. Without an effort in this direction there will continue to be training programmes directed at immediate remedies for immediate symptoms. Training policy for agricultural workers leaving the land, for example, has been to provide instruction in industrial operator skills, super-

vision and management practice. But if these training programmes run concurrently and over a limited period, they fail to meet the real needs of change. Such an approach may be characterised as a training policy solution. By focussing on training a group of people for a group of available jobs, it fails to allow for the fact that people and jobs are not static. A "manpower policy solution" would be to integrate the various levels of training over the appropriate time-span. From the point of view of industrial systems this allows for the needs of manpower succession and from the individual's point of view it recognises that he may have a career rather than a series of jobs.

CHAPTER 2

EVALUATION OF THE TRAINING PROGRAMME
(a) An overview

A - Evaluation in the Socio-Economic Domain

In this broadest of domains, what should be sought is most open to dispute, and what may be achieved most open to doubt. The successive interactions of training outcomes with other factors in the various domains defeat any attempt to evaluate those outcomes in a strictly controlled fashion. At the same time, the evaluation of the ends of training penetrate directly to the sphere of political decision.

A decision to implement a certain training project may for example, entail decisions about where people live and hence about housing policies or transport investment. Less tangible but just as real are costs and penalties arising perhaps from the splitting up of families by age-group, urban congestion and life-style etc. Are the families of inner-London inherently different from other people ? Yet teachers are paid a premium to work in their children's schools.

To take a more directly industrial example, if workers fight redundancy by taking over their factory, is it worth investing government money in training programmes for them ? Apart from the immediate financial considerations of expected trading profit, savings on social security payments etc., what value is to be attached to the new forms of industrial life which such events may lead to ? Or to the difference in morale between men who have saved their own jobs and men who have been left unemployed ?

Evaluation of human outcomes faces always the problem of putting on a common scale the concrete and the intangible or, at best, the vague and the definite. Political vision, exercised through the normal processes cannot be replaced by any technique which social science has to offer, but the evaluation of training may be the means of adding to political judgement the techniques of social investigation. Its most important effect might

be not merely to extend the use of social surveys and sociological analyses by governments, but to introduce the idea of planned social experiments. Until now such "experiments" have scarcely merited the name, being precipitated by interests which pre-empt the results. Consequently, there is generally little serious attempt at evaluation and it is left to historians to present their results to a later generation. Neither are small pilot schemes enough in themselves. Paradoxically, the restricted project designed to eliminate some of the variables may be more difficult to interpret than a large-scale project. In the social field, as in others, effects do not always "scale-up".

The task in the social Evaluation of Vocational Training therefore is to pursue the consequences of training across the normal divisions between policy areas and to bring such diverse instruments as Cost Benefit Analysis, attitude inventories etc. to bear on a unified investigation of social events. Only by broadening the scope of evaluation procedures can decisions reflect the nature of the realities they are intended to deal with. The resultants of training actions can be analysed into economic, social and human components. Having achieved these distinctions in principle, the implementation of appropriate evaluation programmes should not be allowed to founder on the objection that we lack the means to acquire the appropriate data. Social investigation will never stand on the same level as a natural science : waiting for more "scientific" instruments is therefore pointless. The determination to broaden the scope of evaluation is the primary need. The techniques and instruments currently available will supply enough date to stimulate the political imagination.

The paper by J. Raven on "Human Resources, Their Assessment and Development" raises wide issues as to the kind of characteristics which should be developed in trainees for our complex interdependent societies. It discusses the difficulties experienced by the educational system, the motivation of trainees and the social selection and placement function of qualifications.

The case-study from Luxembourg is a good example of how a training system can become distorted from its original goals. The study describes how it became necessary to introduce a new Certificate in Practical Skill in order to implement "a method of developing practical skills, manual intelligence and skills for

certain professions which require no fancy abstract theoretical knowledge". It was found that the existing Certificate in Vocational Skills was too difficult for a substantial (up to 50 %) number of trainees, despite a growing demand for skilled works.

Finally a note from Denmark, contributed to the seminar by C. Jorgensen argues that training will in the future have to pay more attention to educational needs, which he enumerates as

(i) Vocational/technical - the need to learn to use new technology

(ii) The motivational problem, leading to the adoption of job-enrichment and job-enlargement schemes

(iii) The social aspect - the ability to adapt to change ; to new educational standards.

B - Evaluation in the manpower policy domain

Since the time lag for feedback data is relatively great in this domain, post-hoc evaluation by itself is unsatisfactory. The primary need is therefore for forecasting techniques built up on previously acquired data. At present, the necessary data is not available and manpower forecasts have been relatively unsuccessful. Even where governments have attempted to forecast in the field of public employment, their predictions have turned out to be far from accurate (c.f. teachers in U.K.). A significant factor contributing to this unreliability is technological and social change, for instance the oil shortage and consequent undersea drilling, or the increase in air-travel during the 1960' s. Some of the social changes presently affecting the manpower system however are known and their future effects can be anticipated.

There is little detailed knowledge of the job patterns and career structures that are followed by most working people. So far, classification has stopped at lists of job-titles and descriptions - another example of a strictly "training policy" approach.

The paper by G. Ducray outlines the growing difficulty of matching training to employment in a modern society. It reviews the various studies, particularly

of a macro-economic nature, which have been carried out in France since 1971 on this problem. Ducray stresses the flexibility caused by the role of the enterprise in choosing what technology to adapt to production, thereby generating specific manpower (and training) needs.

At present the concept of broad-based training is frequently invoked where predictive power is lacking. While broad-based training has its own particular virtues in terms of the quality of the individual's learning, it does not offer a universal safety net. It is satisfactory neither from the point of view of the employment system nor from the point of view of the individual learner to attempt training which has vaguely defined outcomes. Adult trainees in particular respond sharply to the degree of perceived relevance in a training programme.

Broadly based training and predictive evaluation in the employment system are essentially complementary therefore. Only by increasing our understanding of the labour market can we define the necessary base on which to broaden training for change.

C - Evaluation within the training policy domain

Evaluation within the training policy system has implications in two directions. It is a sub-ordinate element of the evaluation of manpower system outcomes and it is the super-ordinate context for the evaluation of training programme results.

Studies in this domain take as their focus individuals in the jobs for which they were trained. The data collected usually falls into one or more of three categories :

1 - Measures of job competence ; e.g. production records or supervisors' ratings, promotion.

2 - Measures of job satisfaction or morale ; e.g. questionnaires, lateness and absenteeism records.

3 - Measures of employment stability ; e.g. "survival" rate of a group of trainees, exit interviews.

Category (1) data is aimed primarily at validating the content and method of training, while category (2)

and (3) data are concerned more with the selection of trainees for that type of training.

The difficulty of drawing the appropriate inferences from labour turnover data has already been referred to. In fact similiar problems arise in the interpretation of category (1) data. Job performance is one of the most potentially misleading sources of training validation. It has been found for instance that young female employees who were thought to be insufficiently skilled after training were in fact simply ignoring the incentive scheme : they were obliged to surrender their wage-packets at home whatever their earnings. Group production norms are also a frequent determinant of an individual's performance, especially in the case of a newcomer from the training school. Thus, whether employment data is referred upwards to the super-ordinate category (manpower system) or downwards to the sub-ordinate category (training programmes) similiar difficulties of interpretation arise.

The problem of employment data in the context of the manpower system has been discussed in the previous section. Data from job-performance can only be interpreted in the light of the total influences which act on an individual performing his job. These include the climate of the employing organisation, norms and expectations of the immediate work group, incentive schemes, quality of supervision and the personal nature of the trainee himself. The nature of many of these factors imposes the need for personal interpretation by the evaluator, but certain formal measures can be taken in order to indicate what factors may be significant in any given situation :

1. Measures of performance obtained under "training school" conditions can be compared with production performance. Large and permanent falls in performance, particularly among previously high performers indicate the need for an investigation of working conditions, pay structures etc.

2. Further evidence may be obtained from comparison groups. If persons with similiar training take jobs in different production units or in different firms there may well be differences between job performance data from these groups. Indeed it is normally to be expected that there will be such differences and that they will often be substantial. It is this which has led training researchers to regard on-the-job perfor-

mance as a deceptive criterion of training validity unless it is well controlled and carefully interpreted.

The need for interpretation referred to here arises from the practical limitations of the purely experimental paradigm. The rationale of experimentation depends upon the "control" of variables. That is to say comparative data should be available to indicate unambiguously what effects are associated with what circumstances. All that is then left to interpretation is the conclusion that the association is causal, i.e. that the circumstances cause the events. It is however, seldom possible to achieve a high level of such control in human affairs. Thus job performance studies are not based on groups of individuals who are identical except in one or two specified ways : they are based on groups of people whose nature and circumstances (of work, of training, of education etc.) differ in many ways. The need to interpret data is therefore increased so as to account for what cannot be controlled.

The study by P. Waldman shows how training aimed at "versatility" produces very different effects in two firms and underlines the essential relativism of training evaluation. In different circumstances different relationships obtain between superficially similiar variables. In this particular study the important circumstance is the climate of the firm : it could equally be the production system or the technology etc. In any case it is vital that the circumstances from which data arise be taken fully into account since it is only the light of such an account that the relationship between variables (e.g. training method and job performance) becomes clear.

(b) HUMAN RESOURCES : THEIR ASSESSMENT AND DEVELOPMENT

1 - The Scope of the Paper and the Importance of the Problem

I have been asked to provide a conceptual paper on the short term evaluation of vocational training. In order to do this adequately, it is necessary to set the discussion in a wider context, and, in particular, to set what I have to say in the context of a discussion of such questions as : "What are the goals of the educational programmes which are to be evaluated ?" "What are the students expected to be able to do better as a result of the courses ; What competences are to be fostered ?" "What is the psychological nature of these competences ?" "How can their presence or absence be detected ?" and "How is one to find out what the long term consequences of people having developed, or failed to develop, these competences may be ?"

Although the paper will be broad in this sense, it will be very limited in two other senses. Firstly, it relates to summative evaluation designed (a) to provide appropriate certificates for students and (b) to develop a better understanding of the nature of the goals to be achieved, the way they are to be achieved, and the consequences which different types of programme are likely to have. This information is expected to be of value in improving future educational programmes. It is not intended to improve the particular educational programme in the course of which it is conducted. The paper is not concerned with the many very useful types of formative evaluation which could be carried out within a particular programme in order to improve it.

Secondly the paper is limited in the sense that the main theme of the paper relates directly only to the evaluation of one sub-sector of training programmes, a sub-sector which, at present, forms only a minority of training programmes. This sub-sector is made up of programmes intended to foster such qualities as versatility, confidence in one's ability to master new tasks, the ability to learn without instruction (a very different thing from learning to take further formal courses) and the ability to build up a picture of an overall programme activity, and one's part in the whole, without having to be given detailed instructions.

In emphasising that the paper relates directly to only one sub-sector of vocational training it is not meant to imply that the paper's relevance to vocational training as a whole is slight. Exactly the opposite is the case. There are two reasons for saying this. The first is that summative evaluations of the sort which will be discussed are essential if educationalists as a whole are to break out of the treadmill situation in which they find themselves. More will be said about this in a moment. The second is that, although the programme to which the paper relates directly form a minority of programmes at present, they are likely to form the majority in the future. More and more, our complex, interdependent, societies will demand that people think widely and responsibly, take personal responsibility for their decisions rather than refer to authority, take the initiative in starting chains of development, and monitor the effects of the action so initiated in order to take corrective action when necessary. Even today if one wants an efficient bus service one requires bus drivers who are able to think in a wide and responsible fashion and able to relate effectively to a wide range of different types of people performing different roles in society.(Van Beinum, 1968). And one needs managers and foremen who habitually consider the social implications of their decisions.

Let me now amplify the first reason I gave for focussing on this topic. Let me briefly try to justify the statement that more attention will have to be paid to summative evaluation in this area if all connected with education are to be able to get out of the highly unsatisfactory situation in which they find themselves. At the present time some teachers find themselves teaching toward goals they do not believe to be very important and neglecting the goals they believe to be more important (Raven, 1974).

In the next section of the paper I will explore the reasons for this in more detail, and will suggest that the same thing is likely to happen to those concerned with vocational training unless more attention is paid to evaluation in the areas which have been mentioned.

What I am suggesting is that the central and most critical problem in evaluation - in the evaluation of vocational training and in the evaluation of education in general - is the problem of specifying the nature of, and developing the means with which to assess, the competencies which it is most important that schools and vocatio-

nal training programmes should be concerned with fostering.

In the course of the paper it will be argued that it has been the failure of educationalists to tackle this problem in the past which has led to everyone connected with education - and not just teachers and pupils - being distracted from the goals they consider most important and to their focussing on goals which are less important.

In saying that not only teachers and pupils have been affected by failure to tackle this problem my intention is to draw attention to the fact that vast areas of social policy have been affected as well : grossly misguided attempts have been made to counter poverty, social disadvantage, and unemployment precisely because educationalists have failed to consider their goals, the way in which they are to be achieved, the way their achievement is to be assessed, and the consequences of the competences developed for the individuals concerned and the society in which they live.

If this situation is to be rectified it seems to me that we must develop ways of evaluating progress towards the goals of education which really are the most important goals. And it seems to me - and I have retrieved a certain amount of evidence to back up my position from literature - that the teachers, pupils, ex pupils and parents that I have interviewed are quite right when they say that these goals include fostering such qualities as the ability to work with others, initiative, and concern to work effectively for the good of the community in which we live.

For reasons which I will discuss in a moment, it seems to me vital that, if the situation I have described is to be rectified, and if the same distortion is not to occur in the section of education concerned with vocational training, we must, in thinking about evaluation, and in carrying out evaluation exercises, resist the temptation to retreat into measuring progress toward goals which, while easier to measure, are less important.

We must resist this temptation because, in spite of the apparently innocuous nature of a decision to follow this path, the decision is, in fact, a decision of immense sociological significance. It brings in its train, as surely as night follows day, a whole host of important social consequences.

Failure to resist the temptation will result in educators, occupational selectors, staff developers, organisational developers, and policy makers who deal with issues ranging from regional development to civil rights, focussing on the goals of education, and on the human resource qualities which are assessed, and gearing their policies and thinking to those qualities, and those qualities alone. As a result they will necessarily neglect to focus on, foster, and consider, the characteristics which are really the most important from the point of view of improving society as a whole, the organisations concerned, and the lives of the individuals directly involved.

2 — The Social Functions of Qualifications

What are my reasons for arriving at the conclusion I have just stated ? The processes just described arise from the social, not the educational, functions performed by educational qualifications. Teachers and pupils are in fact well aware of the social selection and placement functions of qualifications, but they have rarely considered explicitly the implications of this function for their own behaviour. Even less frequently considered are the implications for the interpretation one places on the mushrooming demand for education which we have witnessed over the last quarter of a century.

Educational qualifications perform the function of allocating people's life chances, and legitimising the way in which the flow of individuals into privileged positions in society is regulated, regardless of the value of the actual content of the programme on which this certification is based. In other words this function is performed without any regard at all to the value of what has been learned in educational programmes. As a result, the level of demand for qualifications - whether that demand is expressed by students or by prospective employers - cannot be treated as evidence of the need for educational programmes. It may be evidence of the need for a legitimated allocator of life chances, evidence of the need for changes in the institutional structure of society, evidence of the need for economic growth, or evidence of the need for a re-distribution of wealth. But that is another matter. In and of itself such demand cannot legitimately be construed as evidence of the need for the skills and competencies fostered in the programmes for which there is a demand.

It is this selection and placement function of educational qualifications which has led to the overwhelming growth in demand for education which we have witnessed for the last quarter of a century. This demand for qualifications has risen unabated by the fact that the competencies fostered in those programmes were not the competencies which were, in the opinion of the teachers, pupils, ex-pupils, and parents involved, the ones which it was most important to foster, and in spite of the fact that there was scant evidence that they would lead the individuals concerned to be able to perform their jobs more effectively or to lead their lives with a greater sense of fulfillment and satisfaction. (Berg, 1971, Jencks, 1973, Raven, 1973).

The fact that certification - and therefore the selection and placement functions of educational qualifications - was based on the attainment of the goals which were easiest to assess, although the importance of these goals was widely questioned, meant that teachers and students had to focus on achieving the goals which were not assessed but which were most important. Had these teachers and students spent their time working toward the more important goals, the students' life chances, and the teachers' reputation, would have been jeapordised.

Confronted with ever increasing numbers of "qualified" applicants, employers reacted by raising their entry "requirements" - still specified in the same terms - thereby adding fuel to the fire.

Employers, like teachers (who also knew that there was something very wrong with what was happening in the educational system, even if they could not quite put their finger on it) continued to play their part in this conspiracy with some degree of soul searching. Although they often knew in their hearts that the criteria on which they based their selection procedures were not those which were really the most important from the point of view of performance, reliance on the criteria they used at least enabled them to avoid the accusation that they were favouring the sons of friends, or those who had "respectable" backgrounds, over and above those who came from less prestigeful backgrounds.

If, therefore, we are to make much progress in assessing the need for training programmes, we would do

well to treat statistics relating to student demand for courses, or which deal with employers "requirements", with suspicion.

More than that. In any attempt to evaluate the long term effects of training programmes we must attempt to separate out the consequences which arise from the skills developed in the course of those programmes from the consequences of certification and placement itself. If this is to be done - and this is the point I have been leading up to - we must be able to assess the real human resource competencies - or incompetencies - fostered in the course of educational programmes in the short term. We will return to a discussion of the nature of these competencies and the way in which they are to be assessed in a moment. But first, I would like to have a brief look at one more issue.

3 - The concept of Continuous Education

If the arguments previously put forward are accepted, it is necessary to seriously re-examine the thinking which has penetrated official reports on the future of education such as the Fauwre report. The, admittedly imperfect, evidence collated by the authors mentioned in the last section strongly suggests that formal educational qualificacions correlate neither with job performance nor with performance in further formal courses. It is therefore important to seriously question whether what is needed in the course of life-long education is further formal courses of the traditional sort or whether something very different indeed is required. The sort of changes which may be needed can be illustrated by taking a few examples. Teachers generally assent to the proposition that they wish to help their students to "learn to learn". However, further probing reveals that by this they normally mean that they wish to help their students to learn how to take further formal courses. As an aside it may be interpreted that Berg's work suggests that they are not even successful in achieving this very limited objective. In contrast, what they might mean is that they would like to teach their students how to make their own observations : to learn how to learn without instruction. This might be an altogether more useful quality for pupils to develop.

If this were what the phrase "help students to learn how to learn" meant a number of questions would arise : (a) through what mechanisms do teachers at present seek

to help their students to develop this ability ? (b) where is the evidence that their students do develop this quality ? (c) how might the presence of this ability be more effectively assessed ? (d) through what sort of programme might is be better fostered ?

4 - What Qualities might Students need to develop in the Course of Training Programmes ?

The discussion in the last paragraph may be taken to imply that one of the qualities students may need to develop in a course of in-service training might be "the ability and the willingness to make one's own observations and learn without instruction". But how do we know whether this is an important quality for participants to develop ? An impressionistic analysis of the qualities required to perform well in the jobs entered by school leavers, supported by data collected from pupils who left school five years earlier, will be presented. This analysis and data supports the view, shared by the vast majority of teachers and pupils, that the main goals of education should be to foster such qualities as initiative, responsibility, decision taking ability, judgement and forecasting and planning skills. Attention will also be drawn to the evidence suggesting that these qualities are essential to the effective performance of jobs as distinct as driving a bus (Van Beinum), by medical practitioners (Taylor), by managers (Egan), and by researchers (Taylor). Finally attention will be drawn to the fact that assistance in developing these competencies is particularly required by individuals undergoing promotion (eg from researcher to research manager) and not only by individuals who find themselves out of work for one reason or another.

This discussion leads to three conclusions :

a) That the qualities to be developed through educational structures, both child and adult, are more in the realm of developing qualities like the ability to work with others, the ability to understand social institutions and get them to work effectively, and the willingness and the ability to embark on a necessary course of action without knowing all the steps to the goal in advance, but equipped with the ability to monitor what happens, learn from it, and take corrective action when necessary, than it is to develop the ability to manipulate mathematical equations, or a brake, clutch and accelerator.

b) The number of people who need to be provided with opportunities to develop such qualities greatly exceeds the number of "unemployed".

c) The structures required if people are to develop these abilities differ greatly from the educational structures to which we have grown accustomed in the past.

5 - What is the Nature of these Qualities ?

If courses directed toward developing these qualities are to be provided and assessed we need to know a great deal more about their nature. After all, teachers at present consider that the development of these qualities is the main goal of education, but they say that, in practice, they do little to foster them and that outcomes in this area are pitiful.

In the main paper it will be argued that these qualities are best thought of, not as abilities (such as intelligence or mathematical ability) but as motivational dispositions. In other words the defining characteristics of these qualities is that the individual engages in them spontaneously ; they represent the willingness to use such abilities as one has to achieve a valued goal. If we are to understand their nature (or index them) we therefore need to understand two components of human behaviour which have received scant attention from psychologists or educationalists in the past. They involve understanding values and understanding qualities which enable an individual to organise his life to achieve his valued goals effectively. A detailed discussion of valued goals and of the components of competence (which have been hinted at above) will be presented.

6 - How can these competencies be fostered ?

It follows from what has been said in the last paragraph that fostering these qualities involves providing people with opportunities to clarify their values and with opportunities to practice and develop new styles of behaviour which will enable them to achieve their valued goals. The former may best be done by presenting them with research data (most of which we do not have), while the latter may best be done through such things as role playing exercises.

7 - How can these qualities be assessed ?

If it is true that these qualities are best thought of as motivational dispositions it follows that the techniques of assessment which are appropriate are those appropriate to indexing motivational dispositions. In other words, it is necessary to find out whether people show a spontaneous tendency to engage in the components of effective behaviour. This can only be done if we know which goals they value, for they would not be expected to engage in these complex activities in relation to goals they did not value. Teachers' failure to ask whether students value the goal toward which they are expected to work may account for the poor predictive validity of the assessments teachers make once one gets beyond the next stage of education. In other words a pupil may display few of these characteristics in relation to performance at mathematics (and hence do badly at it) while being able to display many of them in relation to a goal he does value (such as football). Furthermore if he later comes to value performance at mathematics because he needs it to achieve a goal he values he may come to do very well at selected branches of it (Berg 1971). Stevens (1960), Bernstein (1971) and the author have shown that the majority of secondary school pupils see little point in their school tasks other than as a route to gaining certificates which will act as passports to high status occupations. When one also understands that many of them do not value entry to these high status occupations, the lack of "motivation" so often commented upon among secondary school pupils comes as no surprise.

A particularly fruitful way of establishing whether people are willing to engage in the patterns of thinking, feeling and behaviour connotated by such terms as initiative, independence, and responsibility may be to explore the consequences they anticipate if they were to engage in these activities (Raven 1973). It may be possible to elicit and assess these anticipated consequences more successfully following the methodology developed by Fishbein (1968). Such assessments should reveal :

a) The strength of an individual's willingness to engage in these behaviours in particular situations.

b) Problems which would need to be tackled in in-service courses. An individual may need research data to demonstrate that certain consequences do not follow

from engaging in a particular type of activity ; alternatively he may need assistance in developing styles of behaviour which ensure that the currently correctly anticipated consequences no longer follow.

c) Changes which may need to be made in the organisational climate of the employing organisation if such behaviour is to be released : if an individual believes that the consequences of displaying initiative in his firm will be his dismissal (and many people do believe this) then it would behove the firm to re-examine its promotion procedures. A recent study showed that the army were in fact promoting people who actually possessed most of the qualities they explicitly recognised they did not wish to favour.

8 - How can the Consequences of these Qualities be assessed ?

The consequences of having developed or not developed these qualities deserves to be studied at three levels : (a) for the pattern of life accomplishment, way of life and pattern of life satisfaction and frustration of the individual concerned, (b) for the organisation in which he works and (c) for the society in which he lives.

Different methodologies are appropriate at these three levels. However, perhaps more important, the consequences will differ depending on the institutional structure of the organisation and society in which the individual lives and works. Attention will be drawn to a number of organisational and community climate variables which moderate the effects of these motivational dispositions.

9 - What Alternative ways of Fostering these Qualities might there be ?

As was indicated in the last paragraph, the institutional structure in which an individual lives and works has the potential to release or frustrate these qualities. It also has the potential to foster them. We earlier spoke of the need for training programmes to concentrate on fostering such qualities rather than on specific occupational skills. We also draw attention to the fact that an enormous number of people could be expected to benefit from such programmes. The paper will conclude by remarking that some ways of organising

firms, some ways of organising regional development programmes, and some ways of organising community development programmes, would be expected to have a much more beneficial effect on the development of these qualities than other ways of organising these things. All will have an effect. The question is which ways of organising these things have what effects on the human resource competencies of the population - on their perception of the institutional structure in which they live and work, on their expectations of their own role in relation to that structure, on their expectation as to the role of others, and on their willingness to take on themselves personal responsibility for engaging in patterns of behaviour which are socially important. In the end the Social Fund might best be spent, not on running courses, but on enabling organisational and community policies to be carried out in such a way that people learn "on the job".

10 - Summary : The Evaluation of Vocational Training Programmes, Staff Development Programmes and Organisational Development Programmes

The implications of what has been said in the course of this paper for the evaluation of vocational training, staff development, and organisational development programmes may now be summarised.

(I) There is an urgent need to focus more explicitly on the sort of qualities with which we have been primarily concerned, that is to say on human resource competencies, on motivational dispositions.

(II) Since these qualities involve a values component, any attempt to foster them more effectively must be based on better research data on the personal and social consequences of people possessing, or not possessing, these characteristics when these people live and work in different institutional structures.

(III) If we are to develop effective ways of assessing these qualities we must pay attention to the fact that it is their self-initiated, spontaneous, nature which it is most important to assess. The critical feature of these qualities is not so much whether the individual can engage in them as whether he tends to do spontaneously. We must think of them as motivational dispositions. The methods to be used to assess them are therefore the methods appropriate to assessing motivational dispositions. There is

therefore a great need for a substantial increase in investment in research and development in this area.

(IV) Means of assessing these qualities are essential, not only in order to evaluate vocational training programmes, general education programmes, and staff and organisational development programmes. They are eesential pre-requisites if anyone whose work impinges on, or involves, these qualities, is to be able to pay attention to them. In other words, it is essential to develop means of assessing these qualities if teachers, pupils, instructors, students, personnel managers or organisational development consultants are to get recognition for their efforts in the direction of fostering these qualities, encouraging their staff to display them, developing regional policies which will encourage them, or taking their existence and development into account in social work. Without measures of these qualities all these groups of people will pay attention to the qualities which are assessed, less important though they may really be. It will be only for fostering these that they will get recognition, and these less important qualities alone will figure in the research studies on which policy is based and in the discussions of hard-nosed policy makers who are only prepared to talk about real (ie detectable) qualities, rather than the numbo-jumbo of trick cyclists.

(V) It is not even possible to assess the long term effects of vocational training, general education, or staff or organisational development programmes directed toward these goals without measures of these qualities. Without such measures, the effects of training programmes will be inextricably bound up with the effects of the social selection and placement function performed by educational credentials. To carry out an effective long term evaluation one must first be able to detect short term differences.

(VI) The long term consequences of people possessing, or not possessing, these qualities will vary markedly with the nature of the institutional structure in which the individuals live and work. The evaluation of training programmes directed toward fostering these qualities therefore implies the development and use of better indices of the nature of the

institutional structures in which individuals live and work.

(VII) The most effective way of fostering these qualities may in fact be through the use of carefully structured staff development, community development, and regional development programmes. To be effective these programmes would have to be explicitly designed to place people in situations in which they would develop these qualities, and which would encourage them to engage in relevant styles of behaviour. This possibility should be carefully studied in any research programme which might be initiated.

(c)THE INTRODUCTION OF THE CERTIFICATE OF PRACTICAL SKILL

A Case-study

(a) Background

It has been the consistent policy of the Ministry of National Education, which is responsible for vocational training, to give our country

(1) a modern educational system,i.e. a diversified and graded system permitting both the best possible guidance of trainees and the best possible general and vocational training according to the actual needs and the employment prospects of our national economy.

A serious effort has been made to base as much vocational training as possible in the schools and to coordinate the various types of training clearly and systematically. With the consent and cooperation of the trade chambers and both sides of industry the Minister of Education has completely and systematically reorganized the training programmes with the following aims :

(1) to raise the general standard of professional qualification and increase the technical capacity of the candidates

(2) to guarantee at the same time a humane, social and cultural training for our semi-skilled and skilled workers

(3) to allow continuous vocational and social advancement of the candidates

(4) to keep up with the increase in technical knowledge in all fields which calls for new qualifications, more extensive training for all professional activity and a more subtle and wider range of functions and levels of training.

The role of vocational training appears in a completely new light :

- firstly it has to provide future craftsmen and skilled workers with solid basic training on several levels ;

(1) Luxembourg

- secondly trainees must be classified according to their prospects and their ambitions ;

- lastly vocational training must be used to the full to guarantee success to young people in their chosen career by giving them the best possible training for their profession.

This obviously means that two requirements of a modern economy clash with each other at school level

(a) growing demand for technical knowledge (qualitative requirements)

(b) demand for a increasing number of skilled workers (quantitative requirements).

The number of failures has in fact increased with the growing intellectual demand on trainees. One effect of the reorganization of technical and vocational training has thus been to limit the number of trainees who meet these new demands. This is obviously in the interests of neither the economy (increasing need for qualified workers) nor of the trainees and their parents (social ambitions).

(b) Aims

There can be no doubt that children vary naturally in their intellectual and practical ability. Should a Minister of Education therefore concentrate on a progressive system of training (which may even be called avant-garde in certain respects, an elitist, i.e. a highly intellectual system and completely ignore those who can no longer keep up with the more demanding new system although they have the necessary practical skill for carrying out a given profession because they lack the ability to assimulate the theoretical abstract knowledge relating to it ?

We feel that a Ministry responsible for the education of the whole country is under an obligation to set up methods of training schools and institutes for developing the quality of the population as a whole, including the physically and mentally handicapped, and not merely the intellectual elite.

And it would be extremely strange if there were no room in the multitude of vocational training methods for a method of developing practical skills, manual

intelligence and skills for certain professions which require no fancy abstract theoretical knowledge.

Should pupils who cannot meet the new demand be simply sent home, dismissed from our schools after a painful struggle from failure to failure without any qualification, when our economy and especially the craft trades are crying out for labour ? The Ministry of Education, in agreement with the Chamber of Trade, has therefore decided to divide craft apprenticeship into two systems : an overall system leading to the certificate in vocational skills (CAP) and a practical system leading to the certificate of practical skill (CCP).

(c) Training programme

The new method of training was introduced in 1969/70.

A. The normal method leading to the CAP passes through the centres of technical and vocational education and consists of a joint seventh year at the age of twelve (after six years of primary education), an eighth year which serves as a observation period and a ninth year when the actual vocational training begins. The following sections are already in operation : metal, woodworking, painting, hairdressing, clothingtrade, building trade, food industry and graphic art (printing and photography).

At the end of this preparatory stage, trainees take an examination and then go on to the apprenticeship proper. The examination is divided into a general theoretical section and a vocational section consisting of vocational theory and practical training in the profession chosen. School marks account for a third of the results.

Trainees who pass both parts of the examination have their apprenticeship reduced by six months to one year, depending on the trade.

During the apprenticeship itself their vocational theory is reduced to four hours a week for two years if they have chosen a three year apprenticeship and for three years in the case of a three plus two or four year apprenticeship.

Trainees who pass only the vocational part of the examination also have their apprenticeship reduced, but must in addition to the four hours of vocational theory

attend refresher courses in general education so that they can repeat this part of the examination.

Trainees who pass only the general part of the examination can either repeat the whole year or begin a normal apprenticeship. Together with trainees coming from continuation courses they attend special classes in vocational theory (four hours a week) during the first year of their apprenticeship, so that they can repeat the vocational part of the transitional examination. If they succeed they will follow the normal classes but will be one year behind their year of apprenticeship. Trainees who fail the whole examination can either repeat the last year or begin a conventional apprenticeship. In this case they, together with trainees who have come from the continuation classes have special classes in vocational theory (four hours a week) and receive general education in their spare time so that they can take the whole of the transitional examination again.

In future all candidates for the CAP will have to have passed this transitional examination.

Trainee apprentices in the accompanying classes preparing for CAP (10th, 11th and 12th year of part-time education) must pass an examination before continuing. If they fail they may either :

(a) repeat the year which will automatically extend their apprenticeship contract by a corresponding period ;

(b) or transfer to the training for the CCP which will allow them to pass on to the following year.

The examination in vocational theory at the end of the apprenticeship will cover only the syllabus for the last school year.

In order to improve coordination between school and workshop, the examining boards will act as supervisory committees for each branch. In addition representatives of the schools will sit on the committees set up to assess the results in the examination in vocational theory and the practical examinations at the end of the apprenticeship.

Apprenticeship leading to the CAP is intended for trainees who are sufficiently intelligent to absorb and assimilate theoretical knowledge, and to allow them to

continue their studies to obtain higher qualifications. It is the normal basis for qualifying as a master and, under certain conditions, as a technician or even an engineer.

It should be emphasized that the ninth year is the first year of a system of apprenticeship which gives successful trainees the following advantages :

1 - as they begin this year of study after eight years of primary school, they finish their vocational training six months or one year earlier than apprentices who begin after they leave school ;

2 - they obtain a solid basic training for a whole group of careers which will make it easier to learn one of this group and to change jobs later if necessary ;

3 - the general level of education in this and subsequent years is higher and therefore more profitable to the trainee than the level of the accompanying classes.

An apprenticeship along these lines is also possible for trainee salesmen, storemen and decorators.

B - Conventional apprenticeship leading to the CCP.

Apprentices who choose this method are attracted by direct entry into professional life for socio-economic reasons or because they are not adapted to the traditional school system. In principal the CCP is only an immediate outlet into working life. It is basically intended for less gifted trainees or those who do not wish to receive theoretical training beyond what is absolutely essential for a good workman.

Apprentices are normally recruited among pupils coming from complementary education and those in vocational training who have failed the examination leading to the CAP. In addition classes will be organized to allow gifted pupils to transfer to an apprenticeship leading to the CAP.

Apprentices intending to obtain the CCP must sign a normal contract of apprenticeship for the chosen career. The accompanying courses will be organized taking the career into account in order to teach the trainee vocational theory in a concrete fashion. They will be organized by a group of firms, by chambers of trade or by

the Ministry of Education either as weekly courses (day-release system) or as periods of theoretical training covering several weeks a year (block-release system). The practical part of the final examination for the CCP will be at the same level as that for the CAP but the examination in vocational theory will be combined with the practical part.

Special classes will be organized in order to allow holders of the CCP to take the theoretical examinations at a later date and thus obtain the CAP.

This method of training meets the economy's need for skilled workers and also meets the social need. It allows the recruitment of a necessary and useful labour force and at the same time gives manually gifted young people a suitable vocational opportunity.

Training leading to the CCP is therefore a complete and coherent method of training meeting all the demands on which our concept of vocational training are based, by which we mean apprenticeship and the assimilation of specific knowledge, regardless of their nature and level, which a person must acquire in order to enter vocational life or to improve himself.

The CCP gives this specific knowledge : the practical examination is the same as that for the CAP, and the theoretical knowledge necessary for good work is also examined but not in an abstract bookish form.

Furthermore the CCP is a stage towards the CAP. The candidate may at any given moment expand his theoretical studies in order to obtain the CAP. Evening classes for this purpose began in 1974.

The CCP is an innovation in the field of vocational qualifications. It arose from three basic preoccupations of the Ministry of Education :

(a) to meet the increased need for highly skilled workers and thus to reorganize the CAP and the master's certificate ;

(b) to meet the need for large numbers of good workmen ;

(c) allow as many young people as possible to obtain a vocational qualification giving them appropriate chances in their chosen career.

The CCP should be seen as the culmination of a normal training period in the first degree of a real vocational qualification.

A diploma normally furnishes proof of a normal training. The value of a man on the labour market depends on his qualifications.

It is therefore in the worker's own interest to obtain a diploma, especially one approved by the State. Many of the less gifted find this impossible because the level of knowledge required is out of their reach.

Regardless of his talent, it appears normal that every man looking for a vocational qualification must be able to obtain a diploma, provided he makes an effort.

There must however be final or intermediary diplomas at every level of knowledge or skill. For this reason we divide each level into stages, each with its own certificate or diploma. The stages in vocational qualification in Luxembourg are as follows :

1. certificate of practical skill (CCP)

2.(a) certificate of vocational skill (CAP)

(b) certificate of vocational education (BEP) equivalent to the CAP but obtained after a completely college-based training

3.(a) master's certificate

(b) technician's certificate

4. Engineer's diploma.

(d) Control of results

Before the CCP was introduced between 36 and 48% of all trainees failed their final examination.

The percentage of failures was reduced by 25% in 1970, 18% in 1971, 11% in 1972, 32% in 1973 and 31% in 1974.

Objections to the CCP fall into three main groups :

(I) The CCP is a method of training on the cheap by which the capitalist bosses can easily exploit an

untrained labour force.

One may reply to this that the opposite is true - which would moreover explain the bitter opposition of certain "capitalist bosses". Two things are possible if we do not introduce the CCP : either we lower the requirements and standard of the CAP (which is against our views : we want to obtain- and the trainees themselves demand it - complete equality between the CAP and the final examination from full-time schooling). In order to obtain this, the level of the CAP must be raised ; either we leave 40 to 50 % of our young people without any vocational qualification ending in an official diploma or we introduce a new stage.

Obviously an unqualified worker can be more easily exploited than a man with an official diploma (CCP).

In modern vocational training there is no distinction between the elite and the others. There are only long and short periods of training.

(II) By introducing the CCP the Ministry of Education is neglecting and abandoning the cultural education of a large number of our young people who are equally entitled to general education.

This argument is not valid since all trainees studying for the CCP have had at least 9 years of general education, 6 years of primary education and 3 years of complementary education in which general subjects occupy a large part of the timetable. We must also reject any argument insinuating that our primary school teachers are incapable of giving a valid general education.

Voluntary day and evening courses are available to all those who wish to complete their general education.

Our aim is to allow all those with restricted powers of assimilation to obtain at least a minimum vocational qualification.

The CCP is the only way in which some children of foreign workers can obtain a vocational qualification because their lack of knowledge of German and French prevents them at first from following the theoretical education. When they have obtained this knowledge they can later take evening classes and obtain the CAP.

(III)The final argument and the only one which really worries us, concerns the attitude of young people and their tendency to choose the easier option if they have the choice between two methods of apprenticeship.

Some young people probably do think like this.

It should, however, also be considered that the parents also have their own views and we have noted that parents tend to make their children go in for the longest period of training leading to the highest qualification. There is always a great fuss if a child has to be removed from a class because he is unable to keep up. We have therefore decided that trainees taking the CCP should first of all follow the CAP class and not be admitted to the CCP except if the school board so advises.

The introduction of the CCP thus appears a logical conclusion for the concept applied when technical and vocational education was reformed. It is purely and simply the corollary of the raising of the level of the CAP, the master's certificate and the technician's certificate.

Other possible solutions are :

(a) the CCP should be reserved for those who pass only the practical part of the CAP examination. They should however, have followed all the classes, including those in vocational theory, for three years ;

(b) a common basis should be introduced for all pupils until the end of compulsory schooling.

(d)GENERAL OBJECTIVES OF VOCATIONAL TRAINING FOR ADULTS

The aim of this section is not to describe nor to prescribe the general objectives of vocational training for any specific country. It should be emphasised that vocational training cannot be considered in isolation. The general aims of vocational training can only be formulated in the framework of the overall social and economic goals of the country concerned.

It follows therefore that it is not possible to rank or assign priority to the different aims of vocational training systems in the different members states. This ranking can only be carried out once the social and economic goals of the country concerned are defined.

However, it should be recognised that there are important economic and social similarities in our countries and that an attempt to systematise the relationshop between these overall economic and social goals and the goals of vocational training may be useful.

I should perhaps stress that by general objectives I mean the overall aims and objectives of the total vocational training system. By specific objectives on the other hand, I mean the concrete aims of a particular training course, which are specifically concerned with the future employment of the trainee or with the situation of a particular group of trainees.

The development of a coherent system of adult vocational training is of rather recent date. If we accept the need for a coherent system this will be established by reference to two factors :

1) the changing structure of the labour market
2) technological change which on the one hand diminishes the number of jobs for unqualified workers and on the other hand, transforms the work-situation for the individual worker, so that retraining becomes necessary in order to exploit effectively new techniques, machines and materials.

These factors which are present in all member states are often not only considered to be important motives

behind the vocational training of adults but indeed to be the only ones. That is, the general objectives of vocational training are :

1) to fight unemployment which will occur if training is not carried out

2) to produce a labor force which is able to carry out the new techniques called for.

With only these objectives it may be possible to reduce training to short practical courses with a rather narrow content and aiming directly at the existing employment outlet. The fulfillment of the objectives mentioned, to fight unemployment and to produce a labor force adapted to the new techniques is of course necessary but it may be asked whether these objectives seen from the view point of both the labor market and society are really sufficient to ensure effective vocational training.

It is generally accepted, I believe, that the changes which are occuring on the labor market are not isolated phenomena but that they are, together with a number of other phenomena, symptoms of a more general transformation which characterises and will continue to characterise our society. For many decades we have experienced changing conditions both for the individual and for society, altered economics and social relations - norms and attitudes which seem to change over a few years. It would seem neither rational nor effective to try to deal with the structural and technological changes which are taking place in the labour market without at the same time trying to co-ordinate these training arrangements with a broader policy setling out to give the individual - as citizen and as employee the best framework possible to enable him to live and work in a society under change.

It is my view - which will be developed for the rest of my talk - that training which is implemented only to fight unemployment and to secure the labour - force currently called for, will not be able to fulfill real educational needs and that it will be ineffective - this means that using different but limited resources may produce very much greater results.

The real educational needs - which may not be felt by the trainees themselves - may be systematised under three headings : the vocational technical aspect : the motivational aspect and the aspect dealing with the individuals relationship to society.

The vocational/technical aspect is concerned with the fact that within a short period of time part of the labor force will have to learn to use new technology offered in a new function or in a new work situation. It is not possible beforehand to know what requirements the individual will have to fulfill and it must be accepted that we have only limited foresight of the technological developments which may occur in the different sectors.

This, of course, emphasises the need to provide vocational training but it also raises the major question of whether it might be possible to limit the demand for the individual to follow new courses if the training would impart not only the knowledge actually needed but also a broader knowledge of techniques and materials etc. within the sector in which he is or will be employed.

Is it not reasonable to expect that such a broad training may make the change to another technical process, or to another job in the same sector more easy and so decrease the demand for further training ?

Attempts should be made to build this broader character into vocational training programmes and I am sure that such programmes could be given with limited resources if the overall vocational training system is planned with this aim.

One possible solution would be that some programme - modules giving knowledge of the basic technology of the different sectors are constructed and used in combination with the more specific programmes. It is important that these programme - modules are co-ordinated with programmes in the vocational education of the young. This may limit the demand for resources and in the long run create an effective and co-ordinated training system.

Many research institutes and many private firms are working, with the motivation - problem , that is the problem how you can involve the workers in the life of the firm. We are very clever in the construction of effective machinery, but experience has shown how difficult it can be to create a working situation which can secure our effective co-operation between workers and machines.

You will often try to solve this motivation-problem in two ways, either through job - enrichment and job-enlargement to create a concrete job-satisfaction, or by various arrangements to give the workers influence on

how the firm is managed.

I have had the chance to follow some practical efforts of this kind in Denmark. One thing has been learnt from these efforts, that they call for much training and education of all the employees. You must train to impart the knowledge for job-rotation and for instance making local procedures of control. You must educate in order to give the necessary formation of the technique for co-operation and for creating a positive attitude towards co-operation.

If this work on the motivation problem is to develop rather than continue at the level of interesting experiments, the experiences show us that it may be a great help, if we, in the vocational training can train on a broader scale in the technology of the sector concerned and if we teach subjects which may give a background for a closer and more responsible co-operation in the firms.

As far as the aspect of the individual and his relations to society is concerned I think it is important to stress that the changes in societies for many people means a general feeling of insecurity and anxiety. It is well known, that an anxious and nervous person very often will act quite irrationally and will adapt attitudes which may be very harmfull both to themselves and to others.

May I point to the fact that that part of the population which has had the least education, very often is that group which has suffered bad consequences of continuous changes and which - naturally enough - feels most insecure and anxious.

First I should like to point to that part of the working force which is doing jobs requiring very few technical qualifications. The work itself gives no possibilities for development and the lack of vocational qualifications gives no possibilities for changing to another less routine job. Being employed for a long time with a job of this sort will make it very difficult for the individual to continue to believe in his future possibilities. It is for instance very often difficult to make these workers go to further training courses.

I should like next to point out that specific problem which the longer and better education of the children to-day may raise in relation to the grown-up, generally less educated, part of the population. This

problem has been called the generation gap and it may in long run deepen the problems mentioned of the less qualified part of the working-force. The day may come, when the better educated young workers will take the jobs from the older workers - when the young generations will give the older generations a feeling, of helpless inadequacy.

The vocational training system for adults gives, some of the best opportunities to change this development. It is however, necessary, if these possibilities are going to be used effectively, that it is accepted that one general objective of the vocational training is to try to lessen this inpact of development. The task is difficult, but the aim must be to try to compensate for the lack of knowledge of their own situation in society.

I have mentioned some in my opinion very important motives for giving vocational training a broader technical content and at the same time for teaching subjects dealing with co-operation and with society. These motives must, even of the attainment of effect will no doubt be very difficult to assess, influence the general objectives of vocational training for adults.

Societies will in the future be characterised by continuous change on the technical/economic and social/political fields ; and societies will, I believe, experience ever growing difficulties unless they create opportunities for individual personnel development - this being one necessary condition for the individual to fulfill the requirements of changes in society.

The pace of change is - whether we understand or not - a dynamic process. One condition to manage this process is that man gets opportunities according to his rich potentialities.

History shows examples of societies which where not able to solve such a problem and very often the way has been opened for destructive forces.

Alvin Toffler quotes in his book A Future Shcok an old worker who says "I wish to know something about the future, I wish to die an educated man."

(e) THE MATCHING OF TRAINING WITH JOB OPPORTUNITIES IN FRANCE

Technological instruction and vocational training difer from academic education in that they provide instruction for a specific activity. In most cases this mode of specialization is achieved by more or less intense training on the job. In this connection, technical schools in France have for long set the pace. But whether training was provided in school or on the job, the goals of teaching programmes have so far been relatively satisfactory introduced by more or less direct collaboration between training schools and enterprises. Two recent phenomena have however called for a reappraisal of this relatively simple method of training the working population for various occupations.

Firstly, the development of mass education in school and university in the 1960s extended the problem of adapting training to the needs of the economy and society.

Secondly, economic growth and technical progress make it impossible to confine training to the reproduction of known socio-cultural models. On the contrary training must anticipate medium or long-term trends.

Thus in relation to the two developing spheres, training and employment, the problemof adapting training to employment has arisen in the Community countries, both as regards quantity and quality. This problem which has been felt most intensely in the field of instruction for the professions is tending to spread to the entire training system for young people and adults.

This question cannot be considered without knowing the objective links between training and employment, varied as they both are. The Centre français d'études et de recherches sur les qualifications (CEREQ), a public institution with an interministerial task, responsible to the Ministries of Education and Labour, has been working since 1971 to improve and develop a system to provide such information.

Starting with the limitations of macro-economic analysis in this field, an indication of the direction

of main research under way to improve diagnosis could be useful with reference to the work of the seminar.

I - STATISTICS AND THEIR LIMITATIONS

A - The question of the adaptation of training to employment was first treated from the macro-economic angle

This stage is particularly well illustrated in France by the forecasting methods used for employment in preparing the IV, V and VI Economic Equipment and Development Plans.

Plan IV (1960-1965) The first attempt to assess the development of employment according to qualifications.

Tool : unofficial conversion grid using the nomenclature of individual activities and the six levels of qualification defined by period of studies (use of the work done by SVIMEZ (Association for the development of Northern Italy) Rome 1960 ; definition of trained personnel required by the Italian economy in 1975).

Plan V (1965-1970) In 1966 a statistical committee was set up to determine the numbers of trained persons in relation to the needs of the economy.

Tool : a conversion grid using the nomenclature of occupations and the national vocational training nomenclature.

Plan VI (1970-1975) A specialised planning committee for vocational training was set up.

Tool : further development of tools mentioned above and coordination with the central economic data system.

B : The limits of this approach are essentially due to the material used and the difficulty of interpreting the results which it yields.

1. The data used on training and employment is made up of :

a) as far as concerns employment, essentially.

1) Population statistics which at each census give the distribution of working population according to a nomenclature defined in 1947, revised in 1954, which uses 12000 terms for activities classified under 1000 typical occupations.

Criticism : The nomenclature is obsolescent and difficult to bring up to date ;

individual statements are relatively unreliable ;

the lack of any job description.

2) The annual survey by the Ministry of Labour on the distribution of employment by qualification in enterprises employing 10 employees or more, using a nomenclature of 300 jobs ;

Criticism : variable field of survey ;

interpretation by the enterprises of a nomenclature based on convention.

b) <u>for training</u> :

1) Statistics on training inputs and outputs, which have been developed in considerable detail over the last ten years, for initial training since 1964, for adult training since 1966.

2) Classified according to a national nomenclature distinguishing six levels and 47 groups of different types of training (1).

Criticism : identification of inputs and outputs according to a formal description of training courses and the nomenclature used in certificates.

II. A statistical comparison of training resources and available employment only allows for a very limited understanding of the adequacy of training facilities (2).

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(1) Dossier n° 8 of the Centre d'Etudes et de Recherches sur les Qualifications, April 1974, La Documentation française

(2) Dossier n°4 of CEREQ: Les possibilités d'emploi selon les formations acquises dans les formations initiales, June 1972, La Documentation française

Example : figures for France for 1968-1975

(annual average)

	employment prospects (without job mobility)		qualifications available (schools and universities)	
	in'000's	%	in'0000's	%
Levels I and II	88.3	14.7	67.5	9.9
Levels III and IV	158.6	26.5	114.4	16.7
Level I	225.1	37.5	303.3	44.3
Total	472.0		485.2	
Level VI	127.2	21.3	199.5	29.1
TOTAL	599.2	100	684.7	100

Criticism :

(a) it is necessary to consider large aggregates, e.g. the addition of resources and requirements at levels IV and III for technicians and senior technicians.

(b) it is impossible to take into account the phenomena of mobility :

- within the working population, particularly from the point of view of job advancement and the operation of the labour market inside enterprises ;
- at the time of transition from training to employment (utilization of acquired knowledge, level at which employed, recruitment policy of firms);

(c) it provides no information on the relevance of the content of training courses to employment (knowledge

acquired as opposed to required).

Thus technicians at level IV are at present defined with reference to the technician's diploma.

These limitations of macro-economic analysis are even more marked with regard to adult vocational training. In this case the job opportunities depend on :

- the decision whether to employ a young person just qualified or an adult ;
- the inclusion of a training course at an appropriate stage as a real career possibility ;
- the, at times, very delicate assessment of the specialization or further training required ;
- the ability of the adult to adapt to a situation new to himself and his family ;
- the vulnerability of the labour market to changes in the economic situation.

But it may safely be assumed that diagnosis of the adaptation of adult vocational training programmes only calls for the collection and processing of more complex data than that needed for the short guidance period of initial training given to young people.

II - THE SEARCH FOR NEW ANALYSIS AND FORECASTING INSTRUMENTS

In France an effort has been made to improve the links between training and employment and to draw conclusion in the three following ways:improve basic information ;

find methods to forecast employment trends ;

determine teaching goals corresponding to occupations.

A. Improvement of basic information on actual working conditions and job mobility

1 - Le répertoire français des Emplois (1) (French directory of occupations). Since 1974 France has

(1) CEREQ bulletin N° 18

been developing a national system to identify and describe occupations corresponding to typical jobs and intends to continue this in the future. Motivated by the same concern as that which produced the English Classification of Occupations and Directory of Occupational Titles, CODOT, or the American Dictionary of Occupational Titles, DOT, this effort :

(a) involves 30.000 surveys of businesses between 1974 and 1978, organized by CEREQ and carried out by 9 inter-regional centres created through the association of the University and the employment offices ;

(b) uses a system of identification common to all occupations, each sign making it possible to calculate the distance from one occupation to another ;

(c) makes provision for the codification and recording by computer of the data collected ;

(d) adds to the job description information on the way of access to a post and particularly on training received by the holder of the post.

2 - Job mobility (1)

(a) Up to now it has only been possible to analyze the phenomena of job mobility in France very roughly, mainly by means of a national survey called "Training, qualification, advancement" of a sample of individuals.

(b) In order to discover working behaviour associated with vocational training, CEREQ :

in the last four years has made a series of national surveys on conditions of access to employment after completion of different types of training

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(1) Bibliothèque du CEREQ - Volume n° 5 - "L'analyse des qualifications et les classifications d'emplois- Septembre 1973 - 273 pages Documentation française - 29,31 quai Voltaire - 75340 PARIS CEDEX 07. Bulletin n° 16

relating to : skilled workers, technicians (1), senior technicians (2), students ;

in 1975 set up a permanent observation system of levels at which employment takes place and career paths which will gradually be extended to adult training courses.

B. Review of methods of forecasting employment with qualifications

The aim is to situate the occupations of men and women in the system of constraints which governs their activities. The unit observed is the socio-technical system constituted by the enterprise which through its organisation determines the distribution of work and the tasks of the manpower employed.

Tool : Previous models were improved and linked to the central economic accounts.

B. This approach is limited mainly by the materials used and the difficulty of interpreting the results produced.

I. The information on training and employment consisted of :

The employment structures of sub-groups and groups of varying size in a given economic branch (mechanical engineering, chemicals, construction ...) have been described. They are as far as possible associated with the analysis of different factors of development : technical, social, economic. Areas of change are thus highlighted and sufficiently defined to make possible statistical checks using surveys by sealed questionnaires sent to representative samples of enterprises. The occupations of computer and automation specialists managers ; the technical building trades have been surveyed in this way.

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(1) CEREQ dossier n° 5, "Accès à la vie professionnelle-enseignement technologique long"

(2) CEREQ dossier n° 7, "L'Accès à la vie professionnelle à la sortie des Instituts universitaires de technologie".

C. Aims of training in the light of the analysis of work situations

It is difficult to determine the relationship between training and employment, because apart from the difficulties of forecasting mentioned earlier, there is no direct of simple link between job requirements and training content.

In the belief that a training contains just as important an element of personal creativity and adaptation as does professional work, research in France has not adopted a determinist and inflexible approach in which the training programme would simply be a transfer or reproduction of the skills required in an occupation. The task which arisen is therefore to analyse work situations in such a way that the trainer may identify the occupational aims to which his programme and teaching methods should be adapted.

In this connection the CEREQ may be considered to have had sufficient experience with an original method of observation of work to be able to undertake the next phase of systematic observations associated with projects to reform the education of young people or adults. The method roughly consists of the following steps :

- in the enterprise regarded as a socio-technical system, to select a stage in which a project (product or service) is processed or prepared by an identifiable team ;
- analyse the activities of this team ;
- translate these activities into language ;
- determine the knowledge brought into play in the utilization of this language.

As shown by a study carried out jointly with the Association pour la Formation professionnelle des Adultes (AFPA), it is essential that the trainer should collaborate in the preparation and formulation of the conclusions so that he can carry out his own task of defining the educational requirements. Furthermore, it is clear that training programmes associated with the specific policy of a firm must be adapted more closely to that firm's general aims.

However, the salient point is that this type of research on the skills actually used in an occupation, has cast direct doubt on the traditional division between general and specialized education. Furthermore, this functional analysis of the division of tasks specific to an organization has exploded the craft concept, this being all the more pronounced the higher the level of qualifications and positions.

The new instruments of knowledge being tested by CEREQ, go beyond a general macroeconomic analysis and are intended to serve a more qualitative and selective training and employment policy.

III - DIAGNOSIS OF IMBALANCES AND PREPARATION OF SELECTIVE PROGRAMMES

Neither employment data nor economic forecasts are sufficient to enable the educator so to define qualitative and quantitative training requirements, that the programming and planning of training will follow more or lens of their own accord. This illusion must be condemned because it still continues to affect attitudes and even policies.

Moreover regardless of the scope and pace of change in our societies not everything changes at the same time.

The primary concern of a coordinated training and employment policy must therefore be to prevent or correct the imbalances that can always arise in a free economy. For this reason early warning signals are important for those responsible for public or private social welfare programmes.

A. Definition of indicators of effectiveness of training on the labour market

On the assumption that a given training is effective from the economical and social point of view if it gives normal access to an equivalent post, observation of the effects of training on the labour market takes on importance. Using the various surveys on the placing of graduates, the CEREQ has pinpointed some significant indicators (1) such as :

(1) CEREQ, Typed document, June 1974

- rate of activity at the time of the survey
- time spent seeking first employment (immediate employment in less than one month, or more than six months)
- geographical mobility (percentage of activities found outside the training region)
- extent of correspondence between the training given and the post obtained
- levels of remuneration (average by speciality, sex, region ; distribution by income bracket)
- occupational classification of the first job
- distinction between permanent employment or interim jobs.

On the basis of these preliminary analyses, a series indicators which are simple but significant in combination, is being prepared, regarding the effectiveness of a training in relation to actual needs. It will be systematically applied to successive batches of trained persons beginning in 1975.

B. Preparation of selective programmes

Whether concerned with the systematic detection of imbalances between training and employment or with more refined studies seeking to coordinate the two trends, the programmes are intended to reinforce the instruments of economic adjustment with more specific and far-reaching operations affecting the actual structures of qualifications, namely the distribution of skills through the population and the distribution of tasks in enterprises. Four types of programmes can be distinguished :

1) Sectoral programmes

They call into question both industrial policy, that is the distribution of work associated with the employment structures, in accordance with the international division of labour, and strategies for technological and social innovations. The task here is to define training programmes for available or employed manpower which would facilitate transition from the present situation to the desired situation, while safeguarding job security and social progress.

2) Regional programmes

The difference here is that the location of enterprises and the characteristics of the local population are an additional source of at times sporadic imbalances, in situations where occupational mobility is incomplete.

3) Programmes for particular groups

In planning training programmes for women, young men and young women and physically handicapped persons, additional constraints will have to be taken into consideration.

4) Programmes for enterprises

In this case it is assumed that all the instruments linking training to employment are subjected to the company goals.

It is clear from the foregoing technical analysis that company strategy is the key to adapting training to employment.

For a long time technology and its development has been regarded as the prime factor in determining qualification requirements that are met by suitable adjustments in vocational training. But all the research made in France tends to restore technology to its true place as one of the factors of production.

Certainly technological evolution has a widespread impact on the volume of the population employed in the various production sectors, by making different uses of qualifications depending on the machinery or processes utilized. But the entrepreneur is constantly having to consider whether if he introduces a new technique he will be able to make use of the skills of the manpower available to him. The widely differing conclusions reached in such cases under satisfactory conditions of competition on the market show that the margin of initiative is unexpectedly wide. This aspect of the problem deserves attention at a time when both the qualifications of the population have evolved considerably as a result of changes in the educational system and may be still

further changed through lifelong education, and when the constraints on our production system are increasing the pressure to develop technical and organizational solutions to labour problems which will make the best of the skills and abilities that a population or nation may have or may acquire.

(f) TRAINING FOR VERSATILITY

Background

The project concerns the training of young sewing machinists in the clothing industry.

Due to changes in market conditions, the lengths of production runs is decreasing and the variety of styles is increasing.

This creates needs for different kinds of skills to those developed by conventional training systems.

These demands are imposing strains on organisations and are believed to be largely responsible for higher labour turnover, recruitment difficulties, increasing labour costs and problems of work organisation. It also implies that conventional training has lost validity.

These problems highlight the need for re-defined training objectives and methods and, above all, for a soundly based internal evaluation of training.

Part of the background to this project is more theoretical, but is vital to the conception of the problem. Our experiences have led us to assume that certain aspects of the organisational climate are likely to affect the development and utilisation of versatility in the labour force. Furthermore, it appears that these climatic factors may be more potent than either the simple effects of a training scheme or even the particular form of production organisation. The evaluation of training therefore cannot be designed without these factors being taken into account.

The Project

After some preliminary development of training ideas, training schemes of comparable designs were implemented in two different clothing firms. The broad objectives were to develop versatility and self-organisation of work groups.

The most important differences between the firms were :

	Firm A	Firm B
Location	Rural	Urban
Size	Small	Medium
Variety	High	Medium
Product	Ladies fashion garments	Childrens outer garments
Management style	Adaptive	Inflexible
General ability of recruits	High	Average

In addition to developing the operator training scheme, the project also had the following purposes :

(1) To validate predictors of versatility and group-working potential for the purposes of selection.

(2) To re-define the role of supervision so as to facilitate maximum development of group autonomy.

(3) To develop courses for instructresses and supervisors to prepare them for their re-defined roles.

(4) To develop the broadest methods of assessment of production performance.

Operator Training

The learning objectives of the operator training scheme were :

At the end of the course, trainees should have the willingness and ability to -

- cope with a variety of unfamiliar operations
- require decreasing periods of re-training
- minimise production losses due to change over to new operations
- work within a self-organising production group of machinists.

The assumptions underlying the training design were :

- the basic skill of versatility concerns the development of favourable attitudes to work, group-working and self-organised learning
- the learning environment must facilitate and support trainees in the development of thise attitudes
- learning objectives must be clearly stated for each operation to be mastered
- the style of instruction must be Learner orientated and have "counselling" characteristics.

Instructress Training

The objectives of the instructress/supervisor training course were :

(1) To promote the establishment of "counselling relationships" with trainees.

(2) To promote the introduction of opportunities for "self-organisation".

The training method is based on the systematic examination of "Training Events" by instructresses and supervisors, the hypothesis being that, by examining these products of their own attitudes, they would be able to see the possibility of alternative attitudes.

CHAPTER 3

EVALUATION WITHIN THE TRAINING PROGRAMME

(a) An Overview

Introduction

In the previous chapter the various factors - social and economic policy, manpower objectives - which result in the decision to implement a training programme were reviewed.

In this chapter we shall deal with the various elements which should be taken into account in designing and evaluating the programme itself ; there exists a comprehensive literature on teaching theory from the field of education, on task analysis from the field of technology and on testing from the fields of psychology and statistics. The problem- a recurrent one in the evaluation of training-is to relate the insights gained from other disciplines to the specific situation of the training programme and to link up these different elements in a systematic and manageable way.

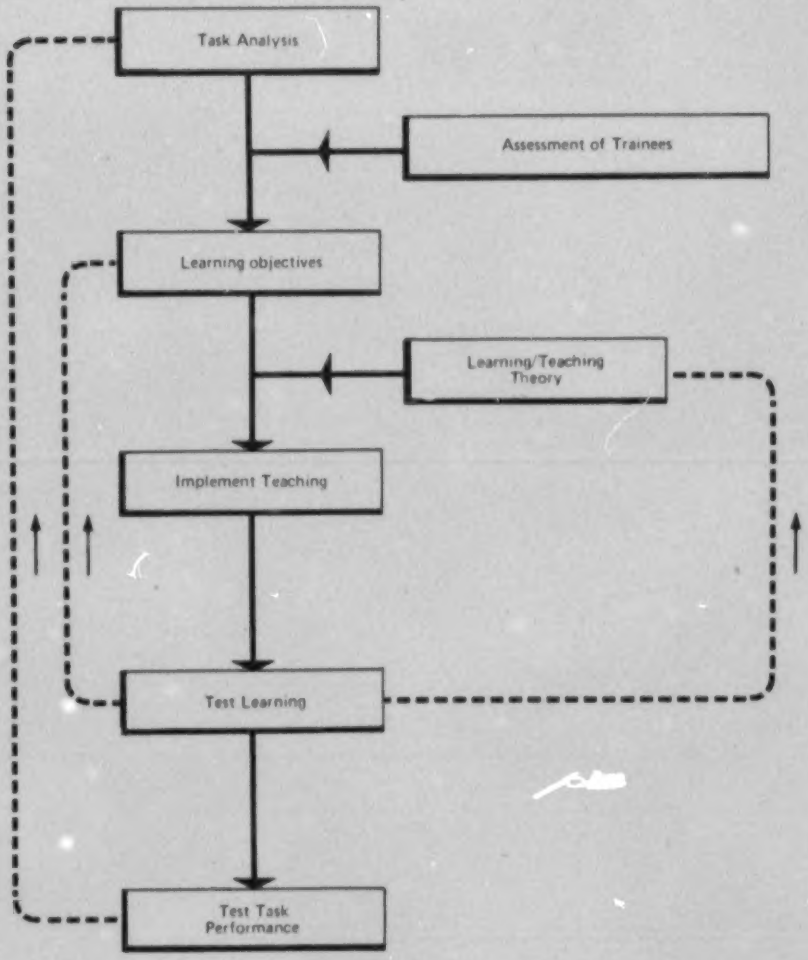
Once again we introduce the material by means of a diagram (2). This is an expansion of the innermost elements of diagram 1 (p.16). In this section the evaluation of the more important elements will be dealt with in turn :

- Task analysis
- The setting of learning objectives
- The assessment of trainees
- The measurement of what has been learnt
- The application of teaching theory.

Diagram 2 is of course only one possible conceptual framework within which the different elements can be located. During the seminar held in Manchester one of

Diagram 2

Outline of the elements involved in the design and evaluation of a training programme.



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the working groups adopted its own framework which is of considerable interest and is annexed on p. 68.

The material in this section will be found to be fairly theoretical and not easily digestible at a first reading. The annexed papers however constitute clear practical examples of some of the issues dealt with in the text. In particular,section (c) may serve as a useful simplified introduction to this chapter. This paper gives practical advice on how to evaluate a training programme and examples of questionnaires used by a group of Dutch industrialists to evaluate their internal training programmes.

Task Analysis : Problems and methods

Due to the degree of skilled effort required for adequate task analysis, it is not uncommon to find a training programme based on an analysis which was carried out in the past but has been superseded by events. This tendency is frequently re-inforced by a desire to economise on training plant, thus leaving trainees to master skills appropriate to machinery no longer in productive use.

It often occurs that the task to be analysed is not just that of one type of operative working with one type of machine but rather the task of a group or category of workers. The paper by Dr. Kemp shows the complexity involved in carrying out a task analysis on "industrial master-craftsmen". The task analysis is clearly shown to be the prerequisite of a system of examination and of certification and hence of access to jobs. What is at stake, therefore, as the paper points out is not just the technical problems caused by task analysis but also the problem of reconciling strong professional and economic interests.

There is also an increased interest in adaptability or versatility as an objective of training. These competencies have received formal recognition but little practical attention either in training or in the educational world. Consequently there is little in the way of formal evaluation technique with respect to such factors. Additionally, the organisational milieu in which they are developed is of crucial importance and this wider perspective must therefore be included in the evaluation of training programmes.

Analysing a task can be either a selective or a comprehensive procedure. For manual tasks an exhaustive description known as "Skills Analysis"(1) is frequently used. This entails a detailed charting of each hand or foot movement and the sense modalities by which they are controlled. This type of exhaustive analysis is now frequently replaced by a "critical incident" approach which is designed to select only those factors which make the difference between a good and a bad performance. These are revealed by comparative observation of good and bad performers - particularly learners. Apart from being more economical than exhaustive description, it is more widely applicable, being suitable for managerial and manual skills alike.

Setting learning objectives

A statement of learning objectives is useful insofar as it provides a clear criterion against which to assess learners or provides a goal for learners and trainers to aim at. The modern tendency is to write "behavioural" objectives. To qualify as "behavioural" an objective should state :

(i) What the learner has to do.

(ii) Under what conditions.

(iii) To what standards.

(c.f. Mager(2).

This approach derives mainly from training in technical skills and is most suited to that form. The gain in precision between the following two examples is obvious :

(a) Non-behavioural - "Learn to do simple milling operations"

(b) Behavioural - Learn to :

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(1) Seymour W.D. "Training for Manual Operations" Pitman.

(2) Mager "Setting Education Objectives".

(i) Perform operationsx, y, z.

(ii) Using metals q, r, s.

(iii) To a specified dimensional tolerance and a specified quality of finish.

Unfortunately, the validity of this type of objective has been overgeneralised. It is not always realistic to try to be so precise about e.g. supervisory training. In this case objectives need to be written so as to focus attention on the topics to be engaged, rather than as hard criteria.

The derivation of learning objectives from a task analysis is via the assessment of the learner's initial competence. This step is frequently omitted, with the consequence that the training programme is burdened with unnecessary material in which the learner is already competent. To an extent, this is inevitable when groups of learners have to be taken as they come. But where possible the programme should cater for significant differences between learners by classified entry and/or by adaptive programming which permits varied starting points (and varied paths). A fixed training period may be a reflection only of fixed ideas and an evaluator should watch carefully for the uncritical implementation of a task analysis as a set of learning objectives.

At this stage it has also to be remembered that the analysis of a task may well yield crucial elements which require action other than training. T.F. Gilbert has coined the maxim "If he could do it to save his life, it is a performance problem rather than a training problem". The distinction here is between inclination and ability. There is certainly a valid point in that certain aspects of performance may best be facilitated by incentives, job re-structuring, equipment re-design etc. Reference has already been made to the importance of the organisational milieu both in defining the performance required and in sustaining it. However the surface distinction between training/non-training is misleading and implies a narrow view or training itself. Inclinations are also matters of learning, but not necessarily of pure technical instruction. It is necessary therefore to make distinctions between objectives best served by technical instruction, those best served by other kinds of learning and those for which alteration of work conditions is most suitable. Using the terminology of J. Raven's paper (Ch.2, section b) we could express the

distinctions as being between :

technical competencies

personal competencies/attitudes

working conditions.

A common feature of training programmes is that they cater for the first, demand the second and ignore the third.

The paper by M. Pearn "Wider Opportunities for Unemployed Adults" (section e) describes a training course whose objective is not to give skills training as such but is rather aimed at ensuring that when the trainee leaves he should

(a) be motivated to seek employment

(b) be familiar with the work outlets in his area and be realistic in his choice of jobs

(c) know how to seek, apply for and hold a job

(d) learn to use his initiative to assess the needs of a job and learn to perform it successfully.

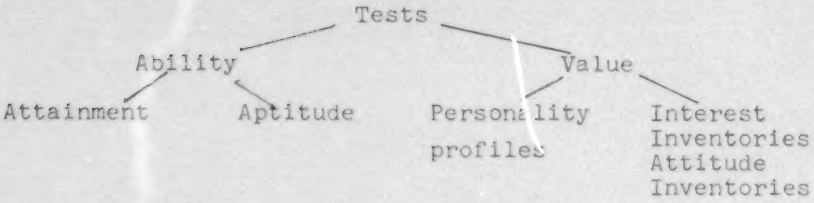
THE ASSESSMENT OF TRAINEES

Types of Test

Selection tests are frequently used and sometimes used well. Faulty technique in this area can reasonably be held responsible for a large amount of waste - both of training effort and of ability.

Standard tests fall into two main groups : tests of ability and aptitude ; and tests of values such as attitudes or interests. (The term "test" for this latter type of measure is particularly misleading since it suggests "passing" and "failing", which is inappropriate in terms of attitudes). Ability tests themselves sub-divide into attainment tests, which measure a person's developed competence in a particular area (e.g. trade test in car mechanics) and aptitude tests which are designed to estimate a person's potential to become competent (e.g. tests of mechanical aptitude). Intelligence tests attempt to estimate a general aptitude over a wide range of cognitive tasks.

Fig. 3 : Types of Tests



Interest inventories are generally used in guidance, though some tentative use has been made of them in the field of selection.

Use of Tests

Because of the direct relation between training content and test content, the attainment test is the simplest to use. Judgements based on aptitude tests are more prone to error since correlations between training performance and test score are often surprising and unpredictable. The complexity of the relation between test factors and training performance is even more pronounced in the case of personality profiles or attitude inventories.

Whichever kind of test is used, certain basic procedures are necessary :

1 - Before any testing is done, a reliable and valid criterion of task performance must be established. A valid test is one which is appropriate-one which in fact measures what it is supposed to measure. Without this, testing is no more than a superstitious ritual.

2 - Before tests are used to select trainees, trainees must be used to select the tests. For an initial period, all those tested must be accepted so as to provide the necessary criterion data by which to validate the tests. The establishment of test-criterion relationships is rarely straightforward and usually requires expert assistance.

3 - Any change in trainee intake, or in the training programme is liable to upset the operation of selection tests. Periodic checks are advisable.

Without the kind of data referred to here the effect of testing on a training programme is as likely to be zero or negative as to be positive.

The underlying rationale of testing is found in the experimental method used in the physical sciences. A short note on the assumptions underlying such research and their application to the evaluation of training is on p. 114.

The interview compoment of a selection programme can be validated in the same manner as formal tests.

Tests of Learning

Following general practice we can divide learning into three general aspects :

Cognitive (intellectual, knowing about things or systems).

Psychomotor (muscle skills).

Affective (attitudes, values).

Whichever type of learning is involved, the testing of what has been learnt is a crucial element in the training process. It is determined by the initial task analysis and selection of training objectives. If for any reason the testing of what has been learnt is invalid (inappropriate) or unreliable (subject to irrelevant variation), the operational effectiveness of the training will be severely impaired. The teaching process will be deprived of some important feedback, quite apart from the effect on decisions about trainees and their subsequent jobs.

Cognitive skills

For cognitive tasks, the translation of a task analysis into learning objectives can prove problematic. An analysis shows only what is done in a given range of situations. That is, it is concerned primarily with the surface structure of behaviour rather than with the deep structure (i.e. understanding).

If all that is needed is the recall of, say, technical information, the surface structure will be a sufficient guide. It is when a more generalised ability is required that the surface structure becomes inadequate by itself.

Two common problems in this area are :

- tests which are overburdened with items demanding the recall of formula etc.
- theory tests at which most trainees do badly. In connection with this latter case, it is well noted that there is a tendency for technical instructors to recapitulate the theory given in their own technical training ; whether or not this is appropriate to the training task in hand.

Tests emphasising recall of information are not necessarily inappropriate - the objective may simply require that. But a severe load on memorising is frequently indicative of something wrong in the task analysis or the setting of learning objectives. This is particularly important since, not only does a memorising test fail to assess the deep structure (understanding), but there are theoretical grounds for supposing that it may well be negatively related. Thus a trainee scoring highly on such a test may in some cases be demonstrating that he has assimilated little.

Affective Learning

Testing for learning in this field is notoriously the most difficult and elusive of all kinds of psychological assessment. Any instrument such as an attitude inventory on personality profile can be faked to some degree, and even if it is answered sincerely is likely to be unreliable. Partly this is due to short-term fluctuations in the way a person feels, and partly to ambiguity in the questions he is asked. However carefully constructed a question is, there always remains the possibility that the question the person is answering is different from the question the test-writer thinks he is asking. Added to this is the fact that people are not always aware of their own implicit attitudes or values. Thus the information which may be obtained is limited to what the respondent is willing and able to give, and even then it may change over a short period of time. Finally, the answers as given have no absolute significance,

being susceptible of differing interpretations. There are available standardised questionnaires which overcome some of these difficulties through extensive validation studies. But these still require careful interpretation by a person with adequate experience.

Because of these difficulties, observational data is frequently used. Here, attitudes etc. are defined in behavioural terms and the person is observed (by himself or others) while actually at work. This yields a behavioural check on underlying attitudes or values, but "behavioural" should not be confused with "objective" (in the sense of "non-subjective"). The assignment of meaning to behaviour is still a tentative, interpretative process. The question of affective learning tests is a matter largely of what is not known and an expert is expert only insofar as he entertains adequate doubts.

At the practical level, what can be emphasised is that any procedure which is in use as a test of attitude development etc. should itself be subject to well designed validation. There is a tendency for some trainers to use such tests with enthusiasm rather than discrimination. Since the ethical questions about such tests are sensitive ones, it is not only a matter of operational efficiency which is at stake.

Selection of teaching methods

Despite the controversial state of learning theory, there are available a number of practical guidelines to the relationship between methods of teaching and various kinds of learning objectives. However teaching methodology is not an exact science - if it is even a science at all. The guidelines discussed are offered as a basis for thinking about method, not as ready-made criteria for instant application.

Teaching for psychomotor skills

These skills are characterised by their "privateness". The way a craftmen's muscles respond to cues of different kinds is not easy to communicate verbally. The words do not exist, probably for the very reason that a skilled person cannot bring to consciousness how he achieves his results. But, surrounding a craft-skill of this kind there is always a matrix of knowledge which certainly can be communicated by symbolic means. The

effectiveness of training is severely impaired if the distinction between these two aspects of craft performance is lost.

On one side, it is futile to expend time in telling, explaining and showing a trainee how to do something which he can only learn by doing it himself. The emphasis must be on practical exercises, and these should generally be graded (a matter for careful experimentation). The type of mistake referred to here frequently shows up as irritation or loss of temper on the part of the trainer. Frustrated by his impossible task he is led to blame the trainee for "not paying attention", "not concentrating", "not listening" etc.

The corresponding error - of treating job-knowledge as a psychomotor skill leads to equivalent waste. Using practical exercises to transmit what can be told or demonstrated is an uneconomical use of time. For instance, in teaching the use of machine tools, lengthy exercises involving the cutting of metal are often used to transmit ideas about setting up work which can well be embodied in exercises with diagrams or models.

Cognitive Skills

The crucial distinction here is between rote learning and meaningful learning.

Rote learning is, like psychomotor learning, largely a matter of practice. The important variable affecting the efficiency of learning is the provision of immediate feedback. This has the effect of preventing the consolidation of errors which are frequently difficult to unlearn once they are established. Lecturing is thus generally a poor method of teaching for this type of material. Written instruction is better in that it permits selfpaced work, which is of considerable importance for adult learners. Programmed instruction is particularly valuable since it has also built-in testing and feedback.

More important is meaningful learning, i.e. learning to understand theories, principles, systems or processes.

Errors are commonly the pivot of learning about ideas. The concentration of "educational technology" on error elimination by the use of carefully programmed small steps has benefitted that kind of training where the task is mainly one of assimilation of new data.

However, where learners need to accomodate to new concepts, the making of errors provides focus and stimulus to the learning process. The treatment of error-making is in fact a key characteristic of training method. To be effective, errors should constitute a genuine problem of the learner's own making. This implies the use of problems and exercises which connect with the learner's existing knowledge sufficiently for him to feel able to produce a reasonable answer, though not necessarily the correct one. This approach tends to minimise lengthy verbal explanation which is in any case unsuitable for many adults.

By avoiding these difficulties, the method may in fact yield a direct saving in time. The process of devising appropriate problem sequences is also a stringent discipline on the training designer and encourages the elimination of superfluous material. Against this it is true that learning by problem solving may take more time than it takes to cover the same materiel by direct telling.

The quality of learning that is required will determine the choice.

The assessment of cognitive teaching method can be represented as a checklist :

1 - Do the learning objectives imply meaningful or rote learning ?

2 - If meaningful, is the learning mainly a matter of assimilation of data within an existing structure of ideas or accomodation of ideas to a significant new form ?

3 - Are errors minimised or utilised ?

4 - Are errors produced by genuine attempts at problem-soving by the trainee ?

5 - What is the previous competence of the learners in the subject ?

6 - How old are the learners ?

7 - What is the level of memory-lead imposed by the training methods ?

An archetypal "bad" training method would yield the following results :

> "Learners in middle life, approaching a new subject with difficult ideas are given lectures or technical notes designed to enable them to produce correct answers straight away".

Affective learning

The approach to attitude development is very variable, each trainer using his own personal criteria of success or failure.

As a general comment it can be said that significant learning in the affective sphere is always of an accommodative rather than an assimilative nature. Thus it implies personal discovery or insight rather than "being told". Apparent changes can be brought about by direct persuasion, but they tend to be superficial and to require a supporting environment to sustain them.

The analogy with the problem solving method in cognitive learning is close. The essential process is the generation of problems by the learner himself as the focus and pivot of learning. The process is likely to be even more difficult to manage than its cognitive counterpart since the problems are less clearly related to "public" phenomena, being more unique to the individual. The very uniqueness of what is being learned makes it impossible to specify in any detail how such learning should generally proceed. However, it is perhaps possible to pick out a few external characteristics as being typical of successful learning/teaching situations.

The important dimensions of such learning situations are :

- the self-generated nature of the learning material.
- the degree of control of the process by the learner.
- the teacher's role as animator and facilitator of the learning process.
- the balance of challenge and support.

In relation to affective learning therefore, objectives can only be indicative, not definitive. The

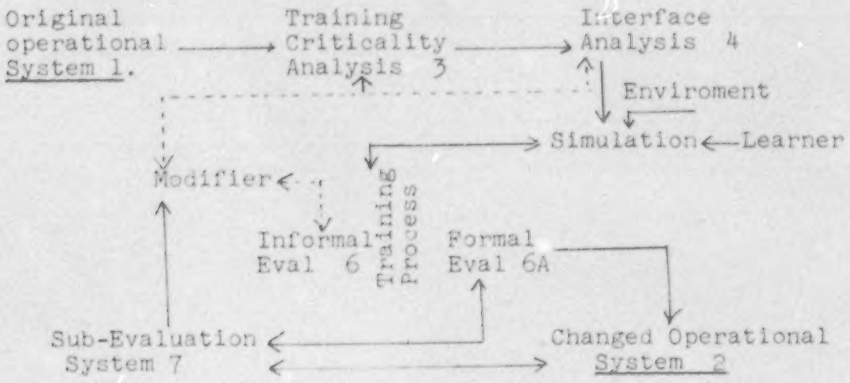
learning objectives serve to indicate the area in which the trainer may choose to challenge the class - and in which they may challenge him - but they cannot define how the challenge will be taken up or with what final result.

As a natural consequence of these conditions, the evaluator's attention is inevitably shifted away from the specific content towards the processes in training. This is appropriate not only to training courses where the objectives are predominantly and explicitly affective in nature, but also to training courses generally. Behing many apparently specific, technical skills are personal abilities such as autonomy, judgement etc. which are the products more of certain kinds of training than of particular training content. The recognition of this is an important change in the modern conception of learning and training.

(b) REPORT OF A SEMINAR WORKING GROUP (B2)

The group, adopted a model proposed by one of their members, Mr. P.J. Edney. This model was seen as an acceptable general specification which, while capable of being highly specific in situations where adequate baseline information was available, also had the advantage of handling, though in cruder fashion, training schemes where the necessary data base was less quantifiable.

The following is an outline of the model.



The basic assumptions are that :

(a) Evaluation needs to have a base line from which measurements or judgements can be made.

(b) Training is a change agent but there are many others - e.g. Organisational Development, incentive schemes.

(c) The setting of the base line is an integral part of evaluation and is a continuous process throughout training.

Certain essential functions emerge in an evaluation system. These are described below and refer to the numbered components in the diagram above.

(1) Original Operational System

It is necessary to describe in as precise terms as possible the components and behaviour of the system before training is carried out. This system may be a group of students prior to training, a factory, or a school system possessing many interlocking occupational groups, seen as a totality.

(2) Changed Operational System

This represents the system of behaviour that is needed after training. It will be described in exactly the same terms as the original system and provides the "target" of training.

(3) Training Criticality Analysis

The function of this component is to identify the degree of behavioural change, and the nature of the changes required between System 1 & 2.

In its refined state, it

(a) Quantifies the contribution that each element of change (through training) will make to System 2

(b) identifies those elements of change which will not produce significant contributions to operational effectiveness

(c) enables the effects of each change to be seen in production or financial terms if required

(d) identifies those changes that are more effectively produced by other change agents.

Some parameters used in the computation of this analysis would include :

(a) The size of change required in each element.,

(b) The frequency with which any change will be used by the new system.,

(c) Weighted date in case of special requirements - i.e. safety, error risks, etc.,

(d) Weighted data showing elements which, although small, are critical to the operation of many others.

(4) Interface Analysis

The function of this component is to translate into, ideally, behavioural training objectives those elements of change which have shown themselves to be highly critical to the operational effectiveness of System 2. The analysis also considers the interaction of the elements in practice, and the interaction of various occupational groups -for example, the definition of training objectives for management would be considered in the light of the training objectives for those that are managed, and vice versa.

(5) Simulation

This defines the most effective specification of training needed to achieve the objectives, both in learning and cost terms. It uses three major components.

(a) The enviromental factors under which the training will take place

(b) The characteristics of the content of learning

(c) The characteristics of the learners.

Sophisticated models can provide a very accurate definition of the learning process and include time to learn, both group and individual optimum time-tabling., effective use of facilities, etc. and definition of longitudinal or modular courses, teaching methods etc.

(6) Informal Evaluation

Enables the quality of each element of learning to be evaluated as it is designed.

(6a) Formal Evaluation

Evaluates the synthesis of the individual elements of learning into cohesive groups - or courses.

(7) Sub-Evaluation System

This provides the essential sensitive link between the training System and the new operational system. It does this by

(a) Receiving continuous feedback from the training course in order to assess whether it is continuing to achieve the objectives.

(b) Receiving continuous feedback from the new operational system (System 2) in order to evaluate the validity of the changes produced by the training system, and to assess whether the criticality analysis (Component 3) has been, and continues to be effective. From its findings it uses the modifier to change the working of either Component 3. 4. 5. or 6.

Therefore the evaluation system employs 5 components - Nos. 3, 5, 6, 6a and 7.

Problems

1) The model we have considered was devised in order to deal effectively with the training of large occupational groups and also with total systems such as factories where a wide variety of occupational Groups was recognised as a single system.

Though we believe the model can be used to deal with problems relating to, for example ,

training for public services

training of the unemployed

training of redundant workers in new skills

training for upward mobility,

it obviously needs to be studied so that appropriate techniques for dealing with such problems can be devised, within its conceptual framework.

2) Repeated reference was made to the lack of adequate measuring instruments for determining the "human factor" elements such as attitudes, motivation, ability to co-operate, and so on. It is recommended that appropriate research and pilot studies for the development of such instruments be undertaken.

(c) DOCUMENTATION AND EVALUATION OF COURSES

EVALUATION IN GENERAL

INTRODUCTION : PRODUCT AND PROCESS EVALUATION

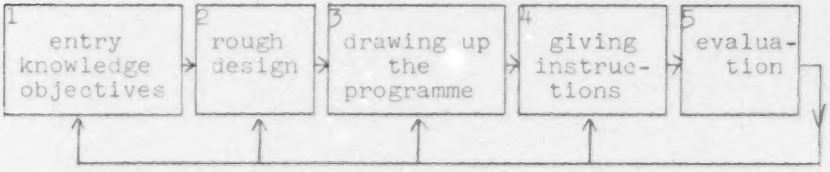
"Evaluation" when applied to education means : appreciating training programmes with a view to making well founded decisions possible. For example : such a decision could be to make improvements in a course.

The training process may be regarded as a production process, the product being the effects of learning. The measurement of these learning effects is sometimes called PRODUCT EVALUATION.

For a long time evaluation in training remained limited to this kind of evaluation. Great efforts were put into developing accurate measuring instruments, such as tests which were to provide objective measures of the effects of learning.

Gradually the conviction has grown that simply checking the results of learning was not enough. If one wants better training programmes, it is also necessary to include the learning-teaching process into the picture. For it is in that very process that the causes of weak learning effects must be sought. In PROCESS EVALUATION, then, all aspects of the learning-teaching process are examined.

What is the place of process and product evaluation within the training process ? For this consider the following simple model :



Boxes 1, 2 and 3 together form the stage of curriculum development. Box 4 is the actual execution of the

training activity. The instruction is followed by an inquiry into the learning effects, e.g. an achievement test, which belongs to box 5.

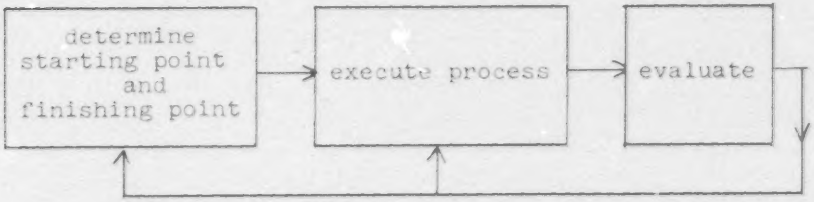
However, box 5 implies more than this product evaluation. For if the results are not satisfactory, one will have to look for an explanation in the way instruction was given. This again may bring to light what went wrong in box 3. If great shortcomings are found, one may have to revise the main outlines from box 2. Then again insufficient learning effects may be traced back to a wrong estimate of the students' entry knowledge (box 1).

Finally, one may also have gained insight into the feasibility of the objectives, their motivating power for the students, their relevance for real life, etc. It is very well possible, even probable that the objectives will have to be revised.

EVALUATION ON A SMALL SCALE

In the introduction we touched upon the evaluation of the entire learning-teaching process, that is, evaluation on a large scale.

We would like to point out that on a small scale, too, evaluation must continually take place. Here the activities repeatedly run through the same cycle.



Every process is preceded by a reflection on where to start and what one wants to achieve. In the same way every process must be closed off with a consideration of how things went, whether the initial situation was correctly estimated and whether the objectives were reached.

The design of a lesson is preceded by a reflection on what the students already know and on what is supposed to be brought across to them. Once the design is

finished, one must go over the result to see if the presumed entry knowledge will be sufficient to learn the subject matter ; or to see if not too much subject matter is packed into this one lesson ; etc. This immediate check is not only important for improving the lesson, but also useful for future lessons to be designed.

The actual giving of instruction should be preceded by a preparation. The teacher makes up his mind about how to check up on the required entry knowledge and how to make sure that the objectives specified can be attained in the time available.

After the lesson he should evaluate whether the required entry knowledge was actually present, whether all subjects were treated in order, whether his way of treating them was acceptable, etc. This immediate check is not only important if the lesson is to be given a second time. It is also relevant for later lessons when subjects that were omitted in this lesson will have to be treated in full.

In a similar way the cycle applies to :

- designing a series of lessons
- giving a series of lessons
- drawing up the main outline of the way a subject will be treated
- teaching a subject in the course of a scholastic year
- etc. etc.

WHY IS EVALUATION NECESSARY ?

One may wonder : why evaluate ? Is it not a luxury ? Or in some way superfluous ?

. Evaluation is needed when designing a course for the simple reason that practically nobody is capable of doing anything perfectly right for the first time, let alone something as complex as a training programme.

Moreover, immediate evaluation of the first part of the design may save a lot of unnecessary work during the design of later parts. One learns from mistakes and shortcomings.

Evaluation is constantly called for when giving instruction :

- to keep informed about the students' progress
- to draw the attention to less fortunate actions of the teachers and to take corrective measures
- to check whether the objectives are still being attained.

. Evaluation is also necessary to keep the quality of a training programme up to date :

- as technology changes with time, so should the contents of the courses
- changes in students' previous training cause variations in their entry levels
- the students' mentality changes, as does their ability, social background, etc.
- the mentality and other qualities of the teachers change.

In general we may say that both during the design of a course and during the repeated running of a course evaluation is essential to optimize and preserve the quality of that course.

PRODUCT EVALUATION

In the case of product evaluation we examine in how far the planned objectives have been attained. These may have been specified for the course as a whole or for a series of lessons or even for one particular lesson.

> Product evaluation is possible if and only if the general aim, the intermediate goals and the specific objectives have been laid down unambiguously and systematically.

METHODS of product evaluation are :

1. Achievement tests. These are tests for the participants. They can be divided into the following types :

- oral
  - oral hearing of the lesson
  - talk or lecture prepared and delivered by the student
  - group lecture by two or more students
- written
  - open questions
    - essay
    - short answer type
  - closed questions
    - ranking
    - sorting
    - true/false questions
    - multiple choice

2. Auto-descriptive techniques. The students are asked to give their opinion about the objectives through :
   - inquiries
   - interviews
     - of single students
     - of groups of students (two or more)

3. Observation techniques. These are applied by observers. They may use :
   - checklists
   - rating scales.

REQUIREMENTS that good achievement tests must fulfil are :

- The students must be told well in advance what will be expected of them during the test.
- They must know the minimum achievement level that is still regarded sufficient.
- The tests should as much as possible cover the entire subject matter and not be limited to a part.
- Very good students should be able to make all tests well in the required time.
- The scoring must be as objective as possible, that is, independent of the person who does the scoring.

Of great importance, especially for product evaluation, would be the following : To obtain information from EX-STUDENTS (i.e. from students several years after having finished their training) on the question in how far the subject matter learnt has proved useful in actual practice. This can be done by means of enquiries or interviews.

Surprisingly enough this is hardly ever done. The omission can be attributed to a variety of reasons :

- It is difficult to distinguish what one has learnt within the context of the course from that outside that context.
- Subsequent courses obscure the learning effects of previous courses.
- Subject matter or learning content that is apparently superfluous may indirectly have a strong positive influence (e.g. higher maths that the student does no longer use may contribute to a better overall understanding or help him read the literature on his subject).
- Many ex-students finish up in a different discipline through a change of function or position.
- Many ex-students are untraceable.

PROCESS EVALUATION

On the case of process evaluation the learning-teaching process is considered in all its properties, such as methods, contents, materials, motivation, job orientation, etc.

Product and process evaluation often go toge ther and are interrelated.

Process evaluation takes place continually during the design and implementation of a course. By far the best way of doing this is having an experimental group of participants go through the learning process while actually designing the course. The first lessons are immediately given a trial run and thus provide useful information for later lessons, so that much unnecessary work can be avoided.

Once the training programme has reached a stable form, continual evaluation is required during subsequent runs of the course. This to ensure especially :

- that the learning situation remains well adapted to the students' entry knowledge
- that the various elements of the learning situation are mutually balanced, as for instance a good co-ordination of the different lessons on one subject

- that the learning situation leads to the desired effects in an efficient way
- that the learning effects do not gradually diminish
- that the objectives, contents and methods do not lag behind modern developments
- that the lessons are job-oriented, that is remain directed towards "practice in real life after the course".

The METHODS used in process evaluation are largely the same as those used in product evaluation. There are descriptive and observing techniques. Achievement techniques however are of no interest here.

1. Descriptive techniques

- inquiries for various categories of people, such as the students, teachers, specialists, educational scientists, people from the students' working surroundings, etc.
- interviews for the same categories
- analyses of the learning content to be criticized by specialists on the subject.

2. Observation techniques

To be carried out by observers during the lessons or at the time that the students are to apply what they have learnt to practice.

EVALUATION CRITERIA

Evaluation if it is to be done properly, must meet certain requirements. These may concern the quality of the investigation or the method of application.

A - The quality of the investigation

1) Validity. (= the extent to which an instrument measures what it is supposed to measure).
An evaluation must be valid. This means that it must be unambiguously clear to both the inquirer and the respondent what the evaluation questions mean. Such questions may contain :

- stating a fact or facts

- stating a relation between cause and effect

2) Reliability (= indifference to circumstances)
The reliability of an evaluation implies that the result is not influenced by the circumstances in which it is done. These circumstances may be related to Person, Place and Time.
Examples :

- The students in group A must not be evaluated in a different way from those in group B. Teacher X must not judge his students in a different way from teacher Y.

- The evaluation in Amsterdam must not be done in a way different from that in Eindhoven.

- In autumn as well as in spring, even years later the evaluation should take place in an identical way.

B - The application

1. Relevance (= usefulness)

The findings must not just be "nice to know", but they must be applicable to practice.

2. Timeliness (ready and suitable for use)

The findings must not come too late, or in a form that makes it impossible for them to be translated into action.

3. Communication (of findings to all concerned)

For instance, the results of evaluating a course while in progress should reach the organizer of the course in time as well as all others concerned, such as the teachers, assistants, administrators, etc.

4. Support

Evaluation should have the full agreement and support of the directors as well as all those concerned. If not, it may have the wrong effects and especially the reliability will suffer.

5. Efficiency

It is obvious that the cost-benefit relation is important for evaluation too : for instance, it may be too expensive to obtain results in time. Moreover, it is important to consider beforehand how to organize the evaluation to save unnecessary work : try to reach an understanding with the people concerned on an efficient planning of the evaluation.

DOCUMENTATION AND EVALUATION OF EXTERNAL COURSES

So far we discussed evaluation in general. As a whole it is applicable to training programmes organized at home.

We shall now consider the evaluation of external training programmes. They are not as easily influenced as those at home.

> It is recommended to set up a DOCUMENTATION and EVALUATION of external courses visited by employers from different firms and different branches.

The DOCUMENTATION is needed for a survey of all training facilities. This is a useful tool for training officers who have to give quidance.

The documentation provides "organizational data". These can be collected on one card per course (both sides are used) in one central place. For an example which has proved practical after many years of teaching experience, see pages 94 and 95.

It is of the utmost importance that documentation is standardized. At the moment there is a jumble of different information leaflets and prospectuses which only too often - each in its own way - try to camouflage shortcomings. It cannot be urged too much that all institutes present their data in a standardized way in a standardized sequence.

The EVALUATION on the one hand allows for a selection of the best and most suitable courses. This too is an important help in giving quidance.

Secondly the evaluation data may provide the necessary suggestions for improving existing courses that appear to be lacking on many points. Like the documentation data these evaluation data can be recorded on one single card per course in one central place. For an example that has also proved practical, see pages 96 and 97.

The evaluation data are collected by means of INQUIRY FORMS. The questions on these forms are arranged and worded according to the data required on the data sheet. The inquiry forms are intended for the following respondents :

1. NON-participants
2. Participants (students)

The forms for category 1 are only meant for a small number of people.

The forms for category 2 are meant for large numbers of students. It is therefore necessary that they can be processed by computer.

The observations of non-participants and participants together make for a picture of a course which is as complete as possible.

COURSE DOCUMENTATION - DATA

date	institute/course/code

- Title of course or conference	
- Institute/School	Name : Address : Telephone :
- Aims of the course or conference	
1. Previous training required	
2. Categories of people the course is intended for	
3. Duration of course or conference	
4. Starting and ending date(s) of course	
5. Costs per participant per course or conference	meals and accommodation: fees : materials : examination : total :
6. Place(s) and Address(es) where lessons or meetings are held	
7. Curriculum survey, showing subjects and teaching methods applied	

Name course or conference		Code

8. Number of participants per class or group	Minimally : Maximally :
9. Number of lessons or sessions a week (a month)	... written a .. .. oral a .. .. workshop a . ...
10. Total numbers of lessons or sessions per type	... written ... ... oral ... ... workshop ... ...
11. Guidance or coaching or participants	Yes/No ; form of quidance or coaching :
12. Skill training on the job	practice on the job during the day supposed to be present : yes/no ; on what terms :
13. Method and frequency of testing acquired knowledge, skill, etc.	
14. Examination date(s) place(s)	
norms	
15. Materials composed or revised for the last time	part ..... in year ..... part ..... in year ..... part ..... in year .....

COURSE EVALUATION - DATA

date	institute/course/code

- Title of course or conference	
- Institute/School	Name : Address : Telephone :
- Aims of course or conference	
1. Inquiry into suitability of participant	method and done by whom : --- quality of inquiry :
2. Previous training required as evidenced by former participants	prescribed previous training (too much / sufficient / insufficient) better alternative (if necessary):
3. Information about content and aims of courses of conference	gives good / sufficient / bad insight about what the course offers
4. Examination requirements	- have been defined well/sufficiently/badly - are of (higher / equal level / lower) than supposed
5. Value of diploma	
6. Possibility of reapplying the efforts made if the course appears too heavy	go to less difficult course :
7. Investing risk, regarding	percentage reaching the end : small/medium/large duration of course : small/medium/large costs : small/medium/large job orientedness small/medium/large
8. Average number of study hours outside course and working time	

Name course or conference _____ code _____

9. For the evaluation the following people have been consulted	participants /instructors/specialists / educational scientists / industry
10. Level of : content	low / intermediate / advanced
participants	low / intermediate / advanced
11. Content is in general	progressive / up to date / behind the times
2 .Content was last modernized	subject ..... in year ..... subject ..... in year ..... subject ..... in year ..... subject ..... in year ..... subject ..... in year ..... subject ..... in year .....
13. Evaluation of course content	
14. Evaluation of learning situation teachers	
Instructors methods applied	
student guidance	
accommodation	
15. Evaluation of course organisation	
16. Evaluation of job orientedness	

EVALUATION BY NON-PARTICIPANTS

The category of persons for whom these forms are intended include :instructor staff, experts (on the subjects taught), educational scientists and "industry". To specify :

- instructor staff are those who are required to give instruction in a way prescribed by others and with means prescribed by others.
- The expert envisaged here is a person well versed in the subject treated in the course.
- An educational scientist is someone whose expertise lies in the field of educational technology, pedagogy, learning psychology, etc.
- "Industry" here is meant to imply : industrial administration ; the training officer ; the personnel manager; the participants' superiors or colleagues.

One may wonder which of these categories can be approached in practice ? The following examples may be helpful to illustrate the point.

- As instructor one may approach a person in the company who lectures in the course. Or a tutor who coaches individual students in case of correspondence courses.
- An expert could be a tutor or coach mentioned in the previous paragraph. Or he may be a specialist in the company who is much concerned with the thorough formation of the people working in his department. Again he may be an examiner, number of a board of examiners or appointed observer.
- More difficult to find is the educational scientist. It should be possible to find someone in the central training department who is willing to evaluate a course.
- An industrial evaluation form should be filled out by one person if possible. This may be the training officer, the personnel manager, or the participants' departmental head. The idea is that the person who fills in the inquiry consults the other categories mentioned in order to come to an evaluation that can be said to be representative for that firm.

If not all of these respondents can be found, this is no serious handicap : the specialist's opinion by itself e.g. may be quite sufficient to come to a general conclusion.

EVALUATION BY PARTICIPANTS

The training officer receives the forms in duplicate. Both of these forms he hands out to the participant together with a copy of "explanation for the participant", with the request to fill in the forms with care and send them back to him in a week.

The training officer may keep the YELLOW forms for his own administration. The WHITE forms are to be sent to the processing centre.

Some three months after the finishing date of the course the results will be sent to the training officers. They show : the degree of precision of the objectives, the pedagogical merits or demerits, organisation, accomodation, job orientedness, learning effect.

This makes it possible to compare different courses or to compare the course with another one of average quality.

APPLICATION FOR GUIDANCE

The forms for participants are also suitable as a means for guiding or coaching individual students while they are taking a course. Guidance is of special importance in case of long training periods.

If, for example, a training programme lasts one or more years, the forms may be used at intervals of, say, 10 weeks informed about progress made. In these cases you may keep the forms and interpret the data yourself. If, however a substantial part of the course is completed, e.g. one term or year, it is advisable to send the forms to the processing centre.

The evaluation data on that part of the course will then be sent to you.

(d) THE STANDARDIZATION OF THE TRAINING OF MASTER CRAFTSMEN IN GERMANY

"Industrial Master Craftsmen" have been trained in Germany for several decades. The training form described below concerns the further training of fully trained skilled workers by means of special courses, which are provided by various bodies and are very varied in content. It is possible to take the "Industrial Master Craftsmen" examination through one of the 80 or so chambers of industry or commerce. This examination is generally recognized throughout industry although it is not subject to state control.

Significance

Examinations for the qualification of industrial master craftsman were originally relatively insignificant since most master craftsman examinations were taken in trades skills (about 32,000 per year) and the majority of these master craftsmen were working in industry. In course of time the industrial master craftsman examination has assumed increasing importance because it is orientated towards the specific problems arising from employment in industry and because the number of master craftsmen in industry who had taken this exam had become considerable. Many undertakings, particularly the larger ones, have for a while required of candidates for a post as master craftsman that they should either have already passed the industrial master craftsman's exam or that they should take it without delay. In addition many companies train industrial master craftsmen themselves or finance their training. Since 1969 participants in such training courses can also obtain grants for subsistence, instruction, tools and training materials through the Federal Labour Office, and considerable use is made of this possibility.

Statement of problems :

1. Problem : No uniform arrangements :

Industrial master craftsman training is organized neither by the State nor by private industry. Only the German Industry and Trade Council (DIHT) - the central association of all chambers of commerce and industry in the German Federal Republic - published in 1956 an outline syllabus as a recommendation which is, however, only adhered to by some of the bodies organizing training. It is not possible to speak of a uniform pattern of training. The final examinations set by chambers of industry and commerce are also similar only in certain basic features. Similarities, however, are only the result of the subject being examined, rather than as a result of regulations or agreements.

Since 1969, on the basis of the Law on Vocational Training (BBiG) the Federal Minister of Education and Science is empowered to fix by decree uniform arrangements throughout the Federal Republic concerning the

- content of training courses,
- aims,
- examination requirements,
- examination procedures,
- admission requirements and the title of the final qualification for the industrial master craftsman examination.

As a result since 1973 the Federal Institute for Vocational Training Research has been carrying out preliminary work on behalf of the Federal Ministry of Education and Science in preparation for the publishing of these examination regulations.

2. Problem : Different interpretations of the concept of industrial master craftsman :

It is difficult to carry out preliminary work for these examination regulations since in the German Federal Republic a master craftsman in industry can be engaged in numerous activities which differ in specialist content. If they were asked it is also certain that even more branches of industry would report the need for special training for industrial master craftsmen.

In addition to this widespread differentiation as regards specialization differentiation as regards function has developed in the activities of the industrial master craftsman : in small and medium-sized undertakings

master craftsmen have more comprehensive functions akin to those of managers, which may even extend to the following areas :

- recruiting, paying and dismissing staff ,

- supervising out manufacturing and production work ,

- calculating cost and material requirements ,

- purchases, sales and other dealings with oustomers.

On the other hand industrial master craftsmen in large or thoroughly rationalised undertakings are no longer concerned with this side of activities, since they have had to cede many of these tasks to others. Normally the above-mentioned work is carried out by the personnel department, the planning department, the production department, the preliminary costing and ex-post-facto costing departments, the purchasing department or the customer service department and other departments. In these departments there are master craftsmen specializing in the specific related tasks.

As a result there is talk of a devaluation of the functions of the master craftsman. However, it should not be overlooked that even in highly organized undertakings there are still "industrial master craftsmen" who continue to fulfill an important function. It is clear that this lowest level of management cannot be dispensed with. Thus the question here is what functions the industrial master craftsman retains and which have been added to his original functions.

It is of course necessary to provide answers to these questions before they can provide the basis for the development of new, uniform examination regulations throughout the Federal Republic.

The complexity and complication of the problems with which we are faced will have become apparent. Unfortunately the problems are, at least in appearance, complicated even further as a result of the fact that we are required, before taking any step, to seen the advice of an expert joint committee made up of representatives of the employers' organizations and the trade unions and which also includes teachers from vocational training schools. Thus it is easy to see that when these questions are being decided we are not concerned alone with questions of specialized content and functions but

that very strong economic and professional interests are involved.

3. Solutions

First Stage

In view of the range of problems described the uniform arrangements for the training of industrial master craftsmen should in our opinion proceed step by step. This means that the issue of a State order must be preceded by a fairly long stage of several years during which various model methods of training industrial master craftsmen are tried out in different trades and at different functional levels on the basis of recommendations and the corresponding examination requirements should be oriented to suit practical and social requirements.

In this process compromise would be unavoidable, which might possibly run counter to our scientific principles.

Second Stage

Division of industrial master craftsmen according to field of activity must be kept to a minimum. The drawing up of arrangements for variation in courses content according to the subject must be left to special expert committees from the trade associations.

The Institute for Vocational Training has to concern itself primarily with the aspects of training and examination of master craftsmen which transcend the requirementsof individual fields.

We consider for instance that the following qualifications can be required of a modern industrial master craftsman in addition to his specialized qualification :

- organizational ability
- ability to communicate
- ability to impart information
- ability to cooperate
- adaptability

- capacity for leadership.

It is clear from this list that these abilities in part depend upon each other. At present the aim of our work is to express these abilities in terms of the curriculum. Added to these qualifications which transcend specialized knowledge is specialized knowledge in the individual subjects. Whereas this latter knowledge can generally be imparted by means of courses and tested in examinations without great difficulty the problems of imparting the qualifications in the above list by means of courses are very great.

Third Stage

The differentiation as regards specialised content and between various levels of function is based upon a pattern of industrial master craftsmen which is best shown in the form of a matrix :

- the matrix could perhaps take the form given in Table.

This matrix can be read and evaluated as follows :

If we refer to the sector entries (vertical) then a training which comes under one of these headings fulfills all the functions represented would produce a type of master craftsman who could be described as a sectorial master craftsman. He can be expected to be able to deal with any problems which are likely to face a master craftsman in this sector.

This would mean that a master craftsman so trained would be able to demonstrate his full command of planning, production, machine installation and tooling-up, direction of personnel, and dealing with customers in this sector.

It is often maintained that the present-day master craftsman fulfills these requirements. But if his training is examined then we discover that it is primarily oriented towards production tasks, knowledge of machinery and the training of apprentices. Questions such as organization and planning techniques, direction of personnel and problems of cooperation with customers, superiors and colleagues occupy, relatively, a very subordinate place.

If we examine the function entries (horizontal) in the matrix and if we imagine that the training follows the pattern presented in these entries then we could assume an industrial master craftsman who would not be mainly concerned with the product produced by the sector but with the work that has to be done before the product can be produced. Thus it would be possible to deduce kinds of master craftsmen concerned with certain functions, e.g. a master craftsman in planning, in production, in machinery, in supplies, and in customer service etc. Such a view of the industrial master craftsman is often rejected by those who are responsible for the training of master craftsmen. They regard this as turning master craftsmen into technicians. However, if the career pattern of the average industrial master craftsmen is examined, then one notices that although master craftsmen who have specialized in a particular function in one sector often change sectors they equally often keep to the same function. Obviously then there is a potential of greater mobility. As regards the future this development is further encouraged by the fact that raw material is being processed less and less by men, i.e. specialist workers, directly, but rather by machines. In the Federal Republic this trend has already made itself very clearly apparent in the training of apprentices and has necessitated considerable changes. The basis of the argument is that in the case of industrial master craftsmen, too, there will be a fairly strong tendency to develop into functional master craftsmen, although the problem is not definitively clear. Unfortunately the question cannot be answered directly by means of the system represented above, since like any system it presents only a very simplied picture of possibilities.

Concluding remarks :

It is probable that the trend is moving in several directions and the result will be :

- sectorial master craftsmen
- functional master craftsmen
- and master craftsmen concerned partly with the sector and partly with functions.

Our task, namely to work out suitable training patterns, where necessary with several variations, and in due course to test them out with the help of suitable

promoters is still important. Only in this way do we consider it possible to develop appropriate examination requirements and to formulate them in legally watertight forms.

Matrix for the grouping of Industrial Master Craftsmen by sector and function for purposes of developing appropriate further training programmes

Functions \ Sectors	Building industry	Concrete & cement industry	Brickmaking industry	Chemical industry	Brewing industry	Baking industry	Confectionary industry	Plastics industry	Metal work. industry	Electrical engineering industry	Aircraft construct. industry	Wood industry	Paper industry	etc.
Purchasing				Example : Master craftsmen with part of responsibility for calculation					x					
Calculation	x	x	x						x	Example : Master craftsmen with full responsibility for personnel direction				
Development/Research									x					
Personnel management	x	x	x	x	x	x	x	x	x	x	x	x	x	
Planning									x					
Machine assembly			x	x	x	x			x	Example: Master craftsmen with part responsibility for finishing work				
Materials & supplies			x						x					
Finishing			x					x	x	x	x	x	x	
Testing			x						x					
Sales									x					

Example : Combination of master craftsmen with partial functional responsibility and partial sector responsibility.

Example : Master craftsmen for all sectors of the metal working industry.

(e) WIDER OPPORTUNITIES SCHEME FOR UNEMPLOYED ADULTS

Background

This is a UKGovernment initiative from the Manpower Services Commission to be implemented through the Training Services Agency. The basic idea is to provide courses for unemployed persons so that they acquire the ability to create, and respond realistically to, their own job opportunities. The scheme is experimental and five pilot-courses are to be mounted in areas of high unemployment. An evaluation plan is to be built into the scheme from the outset.

The Official Objectives

(As skills training is not given, persons on the course are referred to as clients rather than as trainees).

When the client leaves the course he should :

(a) be motivated to seek employment ;

(b) be familiar with the work outlets in his area, and be realistic in his choice of jobs ;

(c) know how to seek, apply for, and hold a job ;

(d) learn to use his initiative to assess the needs of a job, and learn to perform it successfully.

Related to these official objectives are the less tangible aims which are embraced in the notion of social education. This involves acquisition of the sociability and comportment skills which are necessary for coping with life generally. Social skills are required for interacting efficiently and smoothly with other people both outside and within the work situation ; e.g. talking to strangers, taking instructions from supervisors, communicating efficiently. By contrast life skills do not necessarily involve interacting with other people but include all those things that are necessary to conducting one's life ; e.g. calculating a wage packet, home finance, getting information, making complaints,

finding accommodation, moving to a new area.

The general objective is to enable the individual to find, secure and retain full-time employment, and at the same time make realistic career decisions based on knowledge rather than guess-work, coupled with a more adequate adjustment to life in general.

Target Population

The unemployed and frequent job-changers, generally at the sub-apprentice level, but excluding the physically and mentally handicapped. The clients fall into two groups :

(a) unemployed school leavers, boys and girls aged 16-18 ;

(b) unemployed adults, aged 19+, men and women.

They are unemployed for a great variety of reasons. These include problems of social adjustment, a lack of interest in work, lack of confidence, a negative attitude to themselves and society, ignorance of the know-how for getting jobs, the effects of traditional or intended unemployment, or general social and educational disadvantages. Many of the clients will also have criminal records. The range of ability will vary considerably though most will be of low general ability.

Clients are recruited for the course by the Youth Employment Service (or Careers Service) for young people and the E.S.A. for adults.

Duration of Courses

In each course there will be a maximum of twenty clients with three full-time instructors. There is no block entry. For adults the maximum duration of the course is twelve weeks, and for young persons it is twenty-four weeks. Clients are, however, encouraged to leave the course as soon as they feel they are ready. There is a small financial incentive to attend the course as the training allowances are in excess of unemployment benefits.

Job Placement

It is not the aim of the course to place each individual in a job. The idea is to develop the ability and

initiative to do this for himself on leaving the course and in the future.

Training of the Instructors

Instructors for the Wider Opportunities Course were chosen from existing Skillcentre instructors according to specifications which dealt with both their craft ability and their temperament and personality. Instructors were not chosen according to trade or craft requirements but rather for their overall suitability for the job. Training consisted of a three-week course : two weeks of class-room instruction, discussion and practical work separated by one week of practical project work. The main topics included understanding the objectives, the use and design of discovery learning, the use of a learning taxonomy, the notion of learning-to-learn course, content material, discussion learning, motivation, interpersonal dynamics, social skills, and techniques for assessing and guiding the individual. The general aim was to equip the instructors for the especial nature of the W.O. course and their special (perhaps unconventional) role in it. To this end the course was designed to give them some of the skills and insights normally possessed by "professionals" e.g. psychologists, training designers, social-workers.

Nature of the Course

(a) The section -

Ideally this should be located under one roof, preferably in one large work-shop. The section typically contains a representative selection of widely used industrial machinery e.g. centre lathes, capstans, milling-machines, drills, power saws and presses. There should also be metal and wood-working benches, welding-bays, drawing-boards, desks and office equipment such as type-writers and photo-copiers. In addition there should be opportunities for painting, decorating, brick-work and horticultural work. There should also be rooms off-set for written work, office simulations, discussion groups, and self-administered instruction packages.

(b) Role of instructor

Because no formal training is given, the instructor has an unorthodox role. His main function is to guide and counsel the client. On the basis of assessments made

by the instructor (see Skill Samples below) he helps the client choose from the many alternatives available to him on the course. The Instructor is encouraged to develop a warm, close relationship with the client, taking care to avoid the traditional formal relationship with its emphasis on the instructor's position of authority over the trainee. Discipline is maintained as far as possible though trust and mutual respect. Consequently a flexible attitude toward lateness and poor attendance is adopted as it is assumed that for these clients, at least, punctuality and attendance are problems they need to resolve. Clients can be dismissed as a last resort, but only if their behaviour is upsetting or disrupting the other clients.

(c) Course Content

There is no set syllabus. The list of equipment above gives some indication of the range of activities that are available to the client. The activities include bench work and metal-working, clothing repair, gardening, electrical work, sewing, electronic assembly, clerical work, working in concrete, pipe-fitting, photography, sailing, calculator operation, hospital work, delivery jobs, cleaning jobs, hotel and catering. This list gives some idea of the comprehensive range of skills, job types, and job locations which the client can experience. He can choose on the basis of both his interest and his ability to learn the basic skills involved. He can spend up to three or four weeks in one area before making a further choice to try others. On the other hand, he might give up one area after a few days and try something else.

(d) Methods

There is considerable emphasis on person-centred learning, with considerable opportunity for individual instruction at the learner's own pace. Wherever it is appropriate discovery learning methods are used, and there is also extensive use of self-administered programmed texts and project kits.

On entry to a course the client discusses his work experience, interests and aspirations with the instructor. As a result of this discussion the instructor will administer a small number of skill samples. These are periods of learning a representative sample of a skill. The client is first taught the task (e.g. a half-lap T joint) and is then asked to perform the task without help

from the instructor who then rates the clients ability to learn the skill against a standardised error check-list. Using the results as an aid the instructor can advise the client in his choice of project work. Equally the client can get a taste of the task to a job area without threat to his self-confidence.

Following the Skill samples the client may choose to undertake a few Trial Projects which are simple tasks involving a couple of days work making an object, with only a small amount of instruction in basic techniques. If a client is particularly interested in one project he may go on to a full project which can take anything up to four weeks. Having completed this he may try out new skills in the form of Skill samples and Trial Projects.

Alternatively he may be sufficiently interested in one area to undertake Job Rehearsals, i.e. one week periods working for an employer and at the end of which he may return to the course, or as sometimes may happen, be taken on permanently by the employer. Attitude development and social skills are taught by means of discussion groups, films, role-playing and formal exercises.

Considerable emphasis is placed on learning the skills of job-getting (e.g. looking around, telephoning, being interviewed). This is considered to be a very important part of the course.

(f) RESEARCH METHODOLOGY AND TRAINING

Educational and training research have to a large extent been carried out by analogy with the physical sciences. Evaluation makes use of such research and is itself often a part of it. The properties and limitations of research methodology are therefore crucial to the process of evaluation.

The typical experimental paradig is :

	Pre-test	Process	Post-test
Group 1	X_1	Method A	X_2
Group 2	Y_1	Method B	Y_2

The assumptions on which the experimental method is based are that individual test results may be averaged ; that groups or individuals with the same scores may be treated as the same ; that different methods may be objectively defined and manipulated. However, it is now often recognised that such assumptions are difficult to realise in practice. The pre-test can ensure only to a limited extent that the two groups are comparable. Even individuals with identical scores are almost certain to be unequally equipped to learn the relevant material. Similiarly, the post-test will give only a partial measure of actual learning and may be distorted in various ways.

An even more demanding task is ensuring that the teaching processes differ only in the intended way. It is usually difficult to change a method of teaching without at the same time changing the content in some respect. Neither is there a satisfactory way of controlling the "teacher variable". Either the two methods are run by different teachers, in which case the two variables "teacher" and "method" are confounded, or the same teacher must use both methods. In this case there will be an interaction effect between teacher style etc. and the method. It is well established that the preferences of a teacher have a potent effect on the way he

uses a method and the results it produces. It is thus difficult, if not impossible, to experiment with "method" as a pure variable. And this leaves out of account the interactions between learner style and method and between learner style and teacher style.

In principle such limitations could be overcome by a combination of exhaustive testing with sufficiently sensitive tests and by the use of sufficiently large samples of learners. However these requirements are very stringent and far exceed the normal resource available in terms of learners, money and appropriate tests. It is therefore inevitable that a purely experimental approach to questions of teaching and learning can produce only tentative results rather than definitive conclusions.

Fundamentally, the problem is that human learning cannot be reduced to bits of measurable behaviour. Behind behaviour lies meaning, and it is this that is of central concern to the teacher, trainer and evaluator. Once this is recognised, the process of evaluation can be seen as interpretive and not a matter simply of objective measurement. Measures can be incorporated into the interpretation and can act as a stimulus to further attempts to understand training events, but ratings or test scores by themselves can only be ambiguous.

It has also to be accepted that interpretation is itself a subjective matter. If it is analytical and makes valid use of data, a sufficient degree of inter-subjectivity can be attained, but this does not fulfill the notion of "objectivity" which has been sought from the experimental paradigm. Neither is evaluation a neutral process. The act of observation is an active causal factor which is always likely to change the situation at which it is directed. The presence of an evaluator, or the knowledge that an evaluation will be made is frequently a significant determiner of trainers' actions.

Evaluation is therefore a social process. No amount of reliance on "objective" techniques can change that, only disguise it. The evaluator's basic skill therefore is that of understanding a social process which includes himself. He may use checklists, tests or idealised models of training but they can only be successful if they are used as aids to understanding people's intention implicit theories and objectives.

CHAPTER 4

THE COST-BENEFIT ANALYSIS OF VOCATIONAL TRAINING

One of the most discussed issues at the Seminar was the question of what significance should be attached to the results obtained by the application of cost-benefit analysis to the outcome of training programmes. Discussion was centered around two broad issues :

(1) What is the relationship between Cost Benefit Analysis (CBA) and "social or ethical" decisions ?

(2) What are the particular techniques and problems encountered in applying CBA to training ?

1 - The scope of CBA

In CBA we are concerned with the economy as a whole and not any smaller part of it such as the firm. Instead of asking whether the owners of the firm will become better off by the firm engaging in one activity rather than another the economist asks whether society as a whole will become better off by undertaking this project rather than not undertaking it, or by undertaking instead any of a number of alternative projects. But once the net is thrown wider and the repercussions over the economy at large are brought into the calculus a number of problems arise which require extended treatment. Chief among these are the distinction between benefits and transfer payments, the concept of shadow pricing external economies and diseconomies.

With social variables the problem lies deeper. Can we, even in principle, attach a financial quantity to the social value of increased employment, for example ? It is in cases such as this that opponents of financial analysis see a danger. Will not administrators feel more confident of objectives which are quantifiable in each terms ? There is perhaps then a danger that financial analysis will pre-empt the whole field of training policy,

that it will cease to be simply a way of judging some of the possible choices and will become the whole basis for choice.

Such a danger is undoubtedly real, but so long as training costs money, some kind of financial analysis is inevitable.

The choice is between forms of analysis which are explicit and forms which are implicit and undeclared. It is therefore essential that the relationship between financial and "humane" values be rationalised, permitting each to be handled by complementary techniques.

The use of cost-benefit analysis has attracted criticism for its tendency to pre-empt values which are moral or political. The fact that this can happen is a direct result of muddle and lack of clarity about domains of decisions. If actions within the field of training policy for instance are made and judged without reference to the wider domains, then the values appropriate to those domains are naturally unrepresented. The fault lies not in any form of financial analysis but in the impoverished context within which it is used.

A property of the technique which is not often recognised is its contribution precisely to the process of value judgement. By attempting to quantify inputs and outputs it focuses debate and clarifies issues of value in a particularly acute way. In the correct context therefore, ethical values and CBA are complementary aspects of the same problem.

The effective use of cost-benefit analysis depends therefore upon a clear conception of the place of training within the various domains of policy. Despite weaknesses the power of the technique to assist decisions about investing resources is already considerable and too great to waste where limited resources are subject to so many competing demands.

2 - CBA - Techniques and problems

P a r t (b) is a comprehensive description of a cost benefit study of a vocational training programme in Ireland. It is of particular interest in discussion of the experimental design used (see Chapter 3,Part(f) on research methodology). The test group used for the study are those who receive training, whether or not they complete the course or whether or not they utilise the

training immediately afterwards (This is because some wastage is regarded as a normal part of a training course). The control group are those who are trainable, are willing to be trained but who are not trained due to a shortage of places in the training centres.

Section (c) discusses the methodology and concepts of CBA and reviews the results obtained so far in applying it to vocational training. The paper makes the very important point that CBA results are very sensitive to the measurement of what are called displacement effects i.e. the process whereby trainees obtain jobs which could have been filled by untrained people and vacuum effects i.e. the process whereby other members of the labour force may be taken into jobs vacated by trainees or complementary to those newly occupied by the trainees. These effects are extremely difficult to measure and therefore care must be taken in the interpretation of results.

(b) COST-BENEFIT ANALYSIS OF ANCO DIRECT TRAINING PROGRAMMES

This is an outline of a study which is currently being undertaken by the Research and Planning Division of ANCO-The Irish "INDUSTRIAL TRAINING AUTHORITY".

The object of the study is the evaluation of the costs and benefits of AnCO's Direct Training Programme and the purpose is to find out the returns on an investment in Training in this area of AnCO's activity.

DESCRIPTION OF DIRECT TRAINING ACTIVITIES

(a) Introduction

Under the Industrial Training Act passed by the Irish Parliament in 1967, AnCO - The Industrial Training Authority has responsibility for training at all levels of Industry and Commerce. The Direct Training Division of AnCO provides facilities for the training of unemployed and retundant workers ; of workers leaving the land, and skill upgrading of employed workers. There are at present nine permanent and three temporary training centres with a total of 2,040 places and an annual throughput in the region of 5,500 adults.

(b) Training Courses Provided

A wide range of courses is provided at the training centres. The courses are designed by a central course design unit and relate as near as possible to the needs of industry in the operative areas. The following courses of 3 months duration or more are available for adults :

Machine Operating :	Capstan and Centre Lathe Operators	26 weeks
	Milling Machine Operators	26 weeks
	Grinding Machine Operators	26 weeks

	Machine Operating	26 weeks
Engineering Assembly :	General Engineering Operators	26 weeks
	Domestic Appliance Servicing	26 weeks
Welding :	Welding Operative	18 weeks
	Fabrication	18 weeks
	Panel Beating	24 weeks
	Sheet/Metal Fabricat.	26 weeks
Electronics :	Electrical/Electronic Assembly	26 weeks
	Radio/T.V. Servicing	36 weeks
	Electronics	24 weeks
	Wiremen	24 weeks

(c) Outline of Administrative and Operational Structures

Each training centre is headed by a Manager who is supported by technical (instructors) and administrative staff. The technical and management services are co-ordinated from the headquarters of AnCO in Dublin. These include, on the technical side, Curriculum Development and Research and Planning activities ; on the administrative side, Budgeting and Finance, Data Processing and General Administration activities.

(d) Cost

The cost which is expected to be incurred in 1975 for the training of 6,390 adults is £ 5,605,436 and AnCO has made an application to the European Social Fund for 50 % of these estimated costs under Articles 4 and 5 of the Fund.

(e) Description of Adult Training Characteristics

The following tables illustrate the employment status, marital status, educational qualifications and age of adult trainees.

Table 1 Employment Status

	%
Unemployed	65.8
Redundant	24.9
Employed	9.3

Table 2 Marital Status

	%
Married	78.7
Single	19.3

Table 3 Educational Qualifications

	%
Primary	24.3
Intermediate	11.9
Group Cert.	16.0
Leaving Cert.	10.1
Other	37.8

Table 4 Age

Years	%
0 - 25	73.6
25 - 30	10.9
30 - 35	5.3
35 - 40	2.7
40 - 45	2.0
45+	5.6

(f) Payments to Trainees

Trainees are paid an allowance depending on age and number of dependants (Table 5). Accommodation is subsidised for trainees who have to live away from home. Travelling allowances are paid in certain cases and social welfare credits are provided.

These allowances are not subject to income tax.

Table 5 Allowances paid to Trainees

Males and Females With no Dependants	Training Allowance
Age 18	£ 10.50
Age 19	£ 13.00
Age 20	£ 15.00
Age 21 to 35	£ 17.50
Age 35 and over	£ 19.50
With Adult Dependants	
For each adult dependant	£ 4.00
Child Dependants	
For 1 to 3 children inclusive	£ 1.00
For 4 or more children	£ 2.00

Social Welfare Payments

In cases where Pay Related Social Welfare Benefit in excess of the appropriate training allowances is payable, allowances equal to the amount of benefit may be paid.

(g) Selection, Placement and Follow-Up Procedures

All trainees are aptitude tested before entering training. About eighty per cent of applicants are found suitable for the present range of courses. There is a high withdrawal rate prior to training due to the long waiting period. It is expected that when greater capacity is available in the training centres the waiting list will decline.

Trainees are given every encouragement to look for suitable job openings while at the AnCO centres, which they can avail of upon finishing their course. The National Manpower Service, through their numerous contacts with industry, give considerable help in this regard. Over 75 % of the adults trained in the past year have been placed in jobs. In cases where the trainee finds employment before completion of the course,

special emphasis is put on the development of those skills which he will be likely to need in his new employment.

OBJECTIVES

Training programmes usually have multiple and complex objectives and this is especially true of training programmes on the national level where the objectives are often part of the Government's macro-economic strategy. The objectives of AnCO's adult training programme can be summarised under three headings :

- Efficient Allocation of Resources

  This includes the objectives of long run economic growth and the correction of structural imbalances in the economy.

- Distributional Equity

  This includes the reduction of poverty and the provision of greater security of employment.

- Economic Stabilisation

  This includes the cutting of unemployment and the reduction of inflationary pressures.

Depending on the economic climate prevailing in a country one or other of the objectives may receive greater emphasis but it is impossible to take action to achieve any of them without affecting all the objectives. For example, programmes to cut unemployment automatically effect the allocation of resources and have an impact on inflationary pressures.

These objectives are not unique to national training programmes ; they apply equally to most Government projects. This facilitates comparison to find out which project most successfully fulfils the objectives. However, it is not easy to gauge the success of projects because some objectives are long term and diffuse. Evaluation methods therefore, tend to be partial and incomplete. It is in the area of externalities - where benefits accrue to third parties and not to individuals and firms directly involved - that Government intervention is most justified but it is in this area that measurement is most difficult.

COSTS AND BENEFITS

The costs and benefits of a training programme are normally delineated from three points of view, Society, the Government and the Individual. Before doing this it is necessary to make a distinction between the impact of training on the actual output of the economy and the impact on an economy's productive capacity. The costs and benefits vary depending on which impact one is trying to measure : if one wishes to measure the impact on actual output, then vacuum, displacement and multiplier effects (see below) should be included ; if one wishes to measure the impact on productive capacity, no allowance should be made for multiplier effects, and the earnings forgone during training reflecting the reduction in productive capacity of putting people in training should be regarded as a cost whether or not they have been replaced by other workers. Ideally the impact should be calculated from both the productive capacity and actual output orientation and this will be attempted in the study. A distinction will be made in the results between hard facts and soft assumptions because of the difficulties associated with measuring vacuum and displacement effects.

Benefits to Society

The benefits to society from training are :

(1) The increase in production after training and as a result of it. (Since the increase in production cannot be measured directly the increase in the trainees' gross earnings will be used as an indirect measure of the increase in production).

(2) Value of work done by trainees during the training course.

(3) Extra new jobs and the vacuum effects associated with the new jobs. (An attempt will be made to estimate these from a study of labour market conditions prevailing during the course of the evaluation).

Footnotes - Vacuum Effects refer to the process whereby other members of the labour force may be taken into jobs vacated by trainees or complementary to those newly occupied by the trainees.

(4) Socio-psychological benefits i.e. increased job satisfaction, reduction in crime, etc.

Costs to Society

The costs to society from training are :

(1) Production forgone during training. (The reduction in trainee gross earnings while training will be used as an indirect measure of production forgone).

(2) Capital costs. (This covers the opportunity costs of buildings and equipment).

(3) The costs of materials, administration, and wages and salaries paid to personnel.

(4) Socio-psychological costs.

Benefits to Government

The benefits to Government are :

(1) Increase in tax revenue as a result of higher earnings.

(2) Saving on social payments as a result of increased employment.

(3) Value of work done by trainees during training.

Costs to Government

The costs to Government are :

(1) Loss of tax revenue as a result of decreased earnings during training.

(2) Allowances, travel and subsistence, payments to trainees.

Footnotes (Contd.) Displacement effects refers to the process whereby trainees obtain jobs which could have been filled by untrained people.
Multiplier effects refers to the process by which an increase in investment generates extra income.

(3) The opportunity costs of expenditure on building and equipment.

(4) The cost of materials, administration and wages and salaries paid to personnel.

Benefits to Individuals

The benefits to individuals include :

(1) Increase in after-tax earnings.

(2) Socio-psychological benefits i.e. increased job satisfaction, etc.

Costs to Individual

The costs to individuals include :

(1) Net earnings forgone during training.

(2) Socio-psychological costs.

EXPERIMENTAL DESIGN

Measuring the impact of a training programme is essentially the problem of calculating the difference in variables between two simultaneous yet mutually exclusive states, when the programme exists and when it does not exist. A number of experimental designs with a control and test group comparison can be used to isolate the impact of training.

1. Before - after comparison ; the person's record before training is compared with his record after training (in other words the pre-training experience is used as the control). (Scott)

2. Control groups from the target population - the control group is selected from people who appear to have a similar background and characteristics to the test group. (Page, Gooding, Cain and Stromsdorfer, Solie, Gobbard and Somers).

3. Control groups from dropouts. (Borus)

4. Control groups from qualified interest non-enrollees - persons who apply but do not enroll for various reasons (Hardin and Borus)

5. Control groups by "Snowball" technique. This type of control group is obtained by canvassing acquaintances nominated by the trainees to find people of a similar background and characteristics. (Main)

6. Control group by random assignment of qualified interest persons. Applicants are randomly assigned to either a control or test group.

In choosing any experimental design it is necessary to satisfy the conditions of internal and external validity. (Campbell and Stanley). Internal validity is the basic minimum without which any experiment is uninterpretable. It guarantees that all exogenous factors are controlled and that changes in the dependent variables can be clearly discerned and opportioned to the independent variables, otherwise a number of effects are compounded and no clear-cut interpretation of the effect of training (in this instance) can be made.

External validity guarantees the representativeness of the experiment - to what populations, settings, treatment variables and measurement variables can the effect be generalised. External validity is an ideal to be aimed at rather than a goal which can be easily realised.

Designs 1 - 5 are open to objections in varying degrees on the grounds of internal and/or external validity. In these designs multiple regression techniques can be used to isolate the effects of exogenous factors but in a non-random situation the competency of these techniques depends upon the inclusion of the variables in tables or equations in correct mathematical form. In contrast, using Design 6, "Control group by random assignment of qualified interest persons", the treatment effect (training) can be measured directly, once randomisation has been achieved by the difference between the mean values of the dependent variable for the treatment and control group. Design 6 satisfies the conditions set by internal validity and this is the type of design chosen for the AnCO study. Design 2 appears to satisfy the conditions set by external validity but if the control group is chosen from the target population, rather than applicants, then the effect being measured is not purely training but the compounded effect of motivation and training.

EXPERIMENTAL DESIGN AnCO STUDY

The following are the test and control groups for the AnCO study :

1. Test Group

   Those who receive training, whether or not they complete the course, or whether or not they utilise the training immediately afterwards. (Those who do not complete training or utilise it afterwards are included because some wastage is regarded as a normal part of a training course).

2. Control Group

   Those who are trainable, are willing to be trained, but who are not trained due to a shortage of places in the training centres.

Type of Sample

A stratified random sample is being chosen because

a) it is reasonable to hypothesise that some sections of the trainee group will be more variable than others

b) it is necessary to ensure that small categories are adequately represented.

Possible Criteria for Stratification

There are a number of possible criteria for stratification.

Age

It is reasonable to assume that age is an important factor which determines the returns to training in terms of the pay-off period and ability to learn new skills.

Employment Experience

The employment experience of the trainee prior to training is a factor which could also influence the trainee's post-training experience.

Educational Experience

The educational experience of the trainee is a factor which could influence the trainee's ability to acquire new skills and find employment subsequently.

Course

The training course is an important determinant of the returns to training in terms of amount invested and the trainee's success in finding employment.

Region

Regional differences in labour market conditions are an important determinant of the returns to training.

Marital Status

The marital status of the trainee could also be an important influence.

In the absence of firm evidence to support the effects of such factors on the employment experience of those who pass through the training centres, the most appropriate method is to stratify by factors which are easily identifiable and more objective in nature, i.e. age and training course. The most practical method of selection of the sample is on a training centre basis and this will indroduce further stratification. The effects of other factors will be regarded as "domains" to be studied rather than criteria for stratification.

Method of Selection of Sample

(a) Compile a list of applicants considered suitable for training in each time period. Divide these into strata classifications.

(b) Choose the required proportion at random from each stratum list and assign them to be trained as the test group.

(c) Choose another random group the same way and ensure that they are not trained for the duration of the study and regard them as the test group.

(d) Those not in either group to be treated in the normal way.

(e) Continue this procedure each time period until a sufficient number of people have been selected. A preliminary analysis of some of the earlier people may indicate the optimal overall sample size.

DATA COLLECTION AND INTERVIEWING PROCEDURE

The data will be collected by direct interview with members of both groups. The interview will cover such areas as :

Personal Vitae

Educational Background

Work Experience

Income

Health

AnCO Training

There will be four interviews with each respondent, the first when the test and control group are completed, the second when the test group complete the training course, the third six months later, and the fourth interview will take place eighteen months after the AnCO training course has been completed.

RESEARCH CONTRIBUTION

Einar Hardin in a review of research on the economic benefits and costs of training programmes, has offered the following recommendations among others, as to how research in this area might be improved :

1. "More emphasis should be placed on estimating the variations in the benefit-cost relationship associated with forms and degrees of training and other conditioning variables".

2. "The follow-up period should be lengthened".

3. "Methods of strict random sampling should be substituted for the judgment sampling of more published work".

It is intended that this study will make a contribution to research in each of these areas.

(c) COST BENEFIT ANALYSIS OF TRAINING PROGRAMMES[1]

Introduction

This paper has two objectives. First to make the work of economists in this field more accessible to those administrators and professional advisors who are not already familiar with it. Secondly, to indicate how the results of existing work - and hopefully future research work - can be utilised in the formulation of policies for training. The paper makes no pretensions to be a technical exposition ; it seeks only to explain enough of the concepts and technical jargon to give the methodology and results of economic analysis a wider audience among those concerned with evaluation training programmes. Part I provides a brief account of the nature and value of cost benefit analysis (CBA) ; Part II discusses some methodological problems and Part III sets out some results and discusses some implications of research work for policy analysis.

Part I

Cost benefit analysis (CBA) is a technique of investment appraisal. It seeks to identify and estimate all costs and all benefits associated with any given programme of expenditure and to evaluate the return on that expenditure. The results can then be compared with the returns available on alternative programmes of expenditure and thus one can ensure an efficient use of scarce resources. If returns can be calculated - either as rates of return on capital investment or as net present values of discounted future annual benefits (2), then CBA provides a clear decision rule to policy makers.

1. Any comments made in the course of this paper and subsequent discussion are personal and do not necessarily reflect those of the UK Training Services Agency.

2. Money is worth more in the present than in the future because it can be used productively. Benefits occurring over a future time period must therefore be discounted at an appropriate rate of interest to give a "present value" which can be compared with the proposed investment (present cost).

It indicates that high or low returns can be expected for various options or for competing policies and hence offers a clear guide to decision makers on the economic aspects of policy decisions. It is well recognised that not all decisions are made on economic criteria but it is presumably accepted that economic considerations are an important element in most decisions involving resources.

A rate of return does not offer a guide to the question "how much training should be financed/provided by public agencies ?" It indicates only that past investment has generated a return of x% and the size of x is an indication of the direction of investment (more, less, the same) but not the size of any increment of investment, although clearly the size of x does suggest the rough order of magnitude of any further investment.

CBA is perhaps a more useful evaluation tool for the planner and policy maker than the professional trainer, for it is concerned more with the return on resources devoted to training programmes than the internal benefits of a training package such as the acquisition of skills etc. However in both cases there is an interest in the return on resources and this is what CBA seeks to evaluate.

Although the methodological difficulties of achieving such measures are discussed in more detail later it is clear that money values are required for the calculation of any rate of return or any net present value. For various reasons this is not always practicable and the appropriate technique then becomes cost effectiveness analysis.

Although, unlike CBA, it does not offer a decision rule the results of cost effectiveness analysis are often striking enough to allow recommendations of one policy rather than another, and at the very least one is able to attach costs to policies and to have some notion of along what dimensions policies may be effective once implemented. The technique contributes to policy making in two main ways :

(I) where alternative policies with the same objectives are being analysed it is sometimes the case that there is no significant difference in the effectiveness of policy A or policy B in securing a defined objective x. In this case a fairly straight forward

cost minimization analysis is possible.

(II) where effectiveness measure are different then one can show the tradeoffs along the various dimensions of effectiveness. Thus one training programme may lead to training of a higher quality (at a given cost) but another policy may generate more trainees in a given period and at a given cost to receive a somewhat lower level of training. The trade off is then one of time span, quality and numbers at a given cost such that say £1 million invested in policy A gives x benefits per unit of time and the same sum x gives y benefits per unit of time if invested in policy B. The final decision of course lies with the planners and policy makers.

Thus either one constrains objectives and effectiveness measure and minimises costs or one establishes the trade off between costs for given achievements.

There are two other small points to add. First there may be occasions when the mere setting out of costs and probable effectiveness of two very different policies will give such striking results that this alone is a helpful guide to decision making. Secondly, one may adjust the technique to take account of decisions between major policies, and decisions between options, but within an agreed programme. Thus having decided to support retraining policies for the disabled (rather than immigrants, young persons, or women etc) there still remains the choice of the best option within the disabled programme. Cost effectiveness analysis is applicable, in principle, to both kinds of decision.

In short then CBA and cost effectiveness analysis are techniques of programmes appraisal. The results can be directly utilized in decision making or policy formation. CBA does provide a decision rule but it indicates only the direction of investment rather than the size of any increment in investment.

Part II - Methodological Problems

There are relatively few problems of methodology where CBA or cost effectiveness analysis is conducted at the level of the individual or the level of the firm. While cost data presents rather more difficulties than is usually allowed it is nevertheless not a serious

obstacle to useful analysis. On the benefit side individuals seek to achieve employment or more stable employment or more satisfactory employment, and of course higher earnings. Benefits to the firm are usually captured in two major measures - that of increased output or increased profits and of course reduced labour turnover. Other benefits to the firm are listed as reduced waste, improved quality, reduced requirement for supervision, lower over-time costs, reduced requirement for maintenance of machines, reduced injuries and accidents, better communications and general raising of employee moral and labour conditions. Some of these benefits can be captured in measured terms but most are subsumed under the two measures of increased output and reduced labour turnover. It should be said immediately that this kind of analyses has only been successfully completed for operative training within the firm. The problems of supervisory training and management training raise difficulties of an order of magnitude which has not yet been successfully analysed.

The major methodological difficulties however are concerned with the evaluation of training programmes with respect to public expenditure. That is the costs and benefits to society of public intervention in the finance and provision of training programmes. On the cost side most economists accept that the cost of training should include the foregone earnings (output) of those who enter training programmes. This is not relevant of course where the trainee was previously unemployed but where he enters training from employment then clearly society has lost the output for which he was previously responsible unless he is replaced immediately from among the unemployed. His earnings represent a proxy measure of foregone output and this must be included on the cost side of any CBA. The major difficulties of course relate to measuring benefits. We should be clear as to the objectives of publicly supported training programmes. In most countries the objectives are some combination of the following :

- training facilities which allow individuals to acquire new skills, craft trades and/or social skills and hence aspire to new job opportunities particularly in areas of labour shortage

- training designed specifically to alleviate unemployment

- training facilities for certain specially disadvantaged groups - handicapped etc.

In all these cases the major benefits can be taken to be either some net reduction in unemployment or net increase in the durability and stability of employment by individuals or increased earnings of individuals or an appropriate movement of trainees to new job/industry opportunities. Measuring these benefits gives rise to certain problems.

The basic assumption is that any increase in output in goods and services due to the productivity of trainees is measured adequately albeit imperfectly by their earnings. The differential between pre and post training earnings is central to the evaluation of direct benefits of training programmes. To measure earnings is to assume that the man is employed and certainly the employment position or post training situation is an important part of CBA evaluation. Indirect benefits-what is known in the literature as externalities - are also crucial to the evaluation. The vacuum or replacement effects occur when jobs that would have been held by trainees had they not joined the training course are now filled either directly by the unemployed or are taken by other employed workers whose vacated job in turn creates a chain reaction through the labour market leading eventually to the employment of hitherto unemployed workers. The effect of replacement is to raise benefits and lower costs.

Displacement effects occurs when trainees on completion enter jobs that are held by others or which would have been filled by others without training. Training leads not to a net decrease in unemployment but simply a reshuffling of the unemployed. The circumstances in which displacement is likely to be severe are not easy to specify. In a shortage - and an increasing shortage - situation the displacement effect is likely to be small. In an oversupply - and rising surplus - situation the effect is more severe. The displacement effect is likely to be more severe where trainees find employment in occupations other than those of the training trade.

The multiplier effect occurs when trainees enter occupations which currently are in short supply. Bottlenecks, i.e. constraints in production work due to a labour shortage, are now released through this increase in the supply of appropriate labour. It sometimes happens that labour - say skilled and unskilled is

complementary and the provision of a skilled man may lead to the employment of an unskilled assistant.

Thus an expansion of output is now possible because a bottleneck is released, causing some net increase in employment (reduction in unemployment) due to the joint demand of skilled or unskilled labour. However there is a real problem in measuring that proportion of increase in output due solely to training.

There is some disagreement within the literature as to the way these technical issues may be resolved and the usualy way forward is to offer a range of values which will illustrate the impact of these effects on the results. One thus has some idea how sensitive any CBA results are to these effects.

Macro economic benefits are recognized in the literature but are seldom estimated in empirical work due to the great difficulty in identification and measurement. The argument is that if training is concentrated in those areas in which there is a current labour shortage and if the employment service is geared to increase the efficiency in job matching so it becomes possible to achieve counter-inflation policies without incurring high levels of unemployment or reflationary policies without causing severe inflation. The difficulty of estimating such benefits usually prevents any empirical work in this field. There is however some discussion of the policy implications for training programmes. Should public training programmes be expanded during periods of recession and contracted during periods of boom or vice versa ? Should the composition of such training programmes be changed such that training for skills take place during recession thus enabling skilled labour to enter labour markets and reduce bottlenecks in the subsequent period of recession and training for social skills take priority during period of boom ?

Another issue of major importance is the redistributive effects of training programmes. CBA is essentially concerned with the efficiency of investment decisions. It is usually assumed that current income distribution is socially acceptable and that where redistributive effects of investments do occur they can be captured by treating each persons gains and losses equally. In many cases the redistributive effects are likely to be so small the question can be disregarded.

However, society may wish to alter the distribution of income between the employed and unemployed ; between colour, classes, and races ; and perhaps between young and old within society. Thus, some persons' gains or losses are now regarded as more important than others. Manpower retraining policies are sometimes the instrument of such social objectives. Certainly training may be regarded as an investment in human capital, and as human capital generates an income stream, changing the distribution of human capital should affect the subsequent distribution of income. How far human capital investment determines (pre tax) income distribution in society is not clear but, either deliberately or inadvertently, it is likely to have some impact and if we are unable to quantify the effects then CBA study of manpower programmes is likely to be incomplete. While it is the case that most of these issues still require further analysis and empirical testing there must be few who do not consider them to be important aspects of cost benefit analysis in the evaluation of training.

Part III - Results

Unfortunately I am familiar only with the United States and UK material and one Swedish study ; I would welcome references to European and other work.

At the company level Professor Brinley Thomas and Dr. Alan Jones and their associates have found that investment in operative training gives a benefit cost ratio of some 6 to 1. Similar results have been found when the studies were extended to similar training in similar firms but in different industries. Dr.Ziderman of London University in his analysis of government provided training found high and positive returns, which, depending the assumptions made regarding external benefits, are of the order of 10 to 15%, using a resultat, investment costs were recouped within five years.

In the US work by Page on 900 trainees in Massachusetts between 1958 and 1961 under the Manpower Development Act (MDA) found net benefits in excess of £3m. That is, the money value of benefits of training received, less costs, exceed £3m. Analysis of the Job Corp and Neighborhood Youth Corp programmes both of which relate to young persons suggest mixed success. But, given high costs and difficult training material, the post training employment and earnings data is impressive - CBA ratios of 2:1 or 5:1, depending on assumptions, are reported

in Thurow.

Borus calculated Benefit - cost ratios for Connecticut training courses ranging from 3:1 to 6:1 depending on assumptions concerning the use of skills, over a 10yr service life. Cain & Stromsdorfer calculated ratios of 10:1 for men and 2.7:1 for women, and an overall ratio of 9:1 in a sample of West Virginia training courses. Using the same data Stromsdorfer calculates rates of return of 90 % for men and 64 % for females. Hardin & Borus calculated a B/C ratio of 1:2 for a sample of Michigan trainees, using a 10yr life and a 10 % discount rate.

In Sweden Dahlberg assumes a 10yr life with a decreasing benefit stream. Discounting at 10 % he calculated a B-C ratio to individuals of between 3.2 & 4.0 and a payback of 21-33 months. The social B/C ratio depending on assumptions lies between 4.3 and 6.7 with a payback period of 17-20 months.

What are the implications of these results for the evaluation of publicly supported training programmes ?

First, all results suggest that some expansion of training facilities would be economically justified although the scale and composition of such expansion raises other issues.

Second, some close empirical estimates of the displacement and replacement effect are needed because CBA results are quite sensitive to these factors. Economic analysis is less than conclusive about the benefits of counter cyclical training programmes and this deserves closer consideration as it is becoming a major policy question in many industrial counties. Finally the request for more CBA research work, on different types of training courses, on different regions, and on different age and sex groups, is no cliche, but represents a badly needed programme of work if policies are to be more carefully formulated and implemented. However despite the imperfections of current work the results have been interesting and valuable and I hope due consideration will be given to economic appraisal by those of you not already familiar with the methods and results of CBA for the evaluation of training programme.

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CHAPTER 5

EVALUATION AND ITS APPLICATION

Underlying much of the discussion in the seminar was a desire for a more integrated approach to evaluation. At present, a decision to invest in a particular programme of training is likely to be taken in the light only of the most immediate employment outcomes. Yet questions concerning the manpower system as a whole are inevitably raised by such a decision. There may also be even wider consequences of a social nature. Training may produce not only skills, not only employed men, but also unemployed men (displacement effect), a demand for further training, geographical mobility and so on. The effect of one particular training programme may be difficult to see, but the national sponsors of training cannot treat individual programmes just as isolated entities. They are inevitably seen in the light of a policy and a policy must be based on aggregate effects.

The process also works in reverse. Changes in the larger scene must be met by an adequate response from the training system. The examples of job-enrichment, the apparently ever-growing need for versatility or the ideology of industrial democracy constitute clear demands on the training system. To meet such demands adequately, it is not enough to respond in a local fashion : the global policy of the training system must anticipate the local expression of needs. Without such a global response, the resources of training expertise and financial support are likely to be out of phase with demands as they arise.

In the language of the model presented earlier, the policies of the various domains need to be linked coherently. It is the objective of integrated evaluation to achieve this, for in practical terms the effective stimulus to policy integration is the clear demonstration of the nature of the dependencies. To achieve this the evaluation of training must start to include the bigger question.

This does not imply that the smaller more detailed ones are replaced, but rather that they are placed in the larger context more explicitly. Studies of labour market structure, of underlying personal competencies implied in this structure and of costs and benefits are examples of initiatives that are under way and which have already shown that they can produce results and insights that are worth building on.

Implicit in the integration of levels of outcome is the integration of outcomes through time. The financing of training projects is usually set within a fairly short time span or one that is arbitrarily determined by institutional factors. But outcomes in the various domains have a time structure of their own. A training project which has a significant impact on the manpower system (whether at the level of one organisation, regionally or nationally) may bring in its train further needs for training after perhaps a year or two. One of the working groups set up during the seminar produced a simple table showing the time sequence for evaluation of the outcomes in the various domains (diagram 4).

The context of training systems outlined in the Seminar supports and elaborates the notion of training as the management of change. This has two aspects to it :

(1) The conceptualisation of the situation of training, i.e. how other things affect training decisions and are affected by training decisions ;

(2) understanding the art and technology of training processes themselves.

Evaluation is concerned therefore with analysing both means and ends. Even if the ends are "given" by authority higher in the system, the evaluation process should still analyse those ends. Without such an analysis the assessment of the means will be bound by the perspectives of the higher authority. This would be to limit evaluation to a mere servicing function and to ignore the educational power properly inherent in it.

Diagram 4

Factors involved in the evaluation of the success of vocational training measures and the time sequence for such evaluation.

Annex to the Report of Working Party A 2

Time Sequence

PHASES / DOMAINS	Assessment takes place after each of these phases: PLANNING	TRAINING	EXAMINATION	OCCUPATION	CAREER SUCCESS	SOCIAL EFFECTS
COST	x	x				
TIME REQUIRED	x	x	x			
(other necessary resources)	x	x	x			
Instructional methods	x	x	x			
Specialist qualifications	x	x	x	x		
Personal objectives			x	x	x	
Training policy objectives			x	x	x	x
Employment policy objectives			x	x	x	x
Other political objectives				x	x	x

The crosses indicate the time at which the evaluation of factors involved in the assessment of success should best be made.

In terms of the model presented in this report (Fig. 1) evaluation can be seen in the following terms :

(i) Analysing the Ends.

This consists of determining how a given objective relates to other needs or policies within its own domain and within any superordinate domain.

Thus a proposed objective stated at the level of the Training Domain must be related to other Training Domain objectives or needs and to the needs and objectives of the manpower Domain and the Social Domain. The process is ordered and cumulative in that the first integration of objectives etc. should be accomplished before carrying out the second integration at the higher level. The outcome of the analysis of Ends may be called the "defined objective".

(ii) Analysing the means.

The means consist of possible actions in subordinate domains. Those chosen are examined so as to estimate their effectiveness in achieving the "proposed objective". Such an estimation may be predictive, using data from past experience where it is applicable. Or it may be concurrent, utilising data fed back from the actions themselves. Referring again to the example of an objective at the level of the Training Domain, the proposed means will consist of actions within the subordinate domains of Programme and Teaching. The process of analysing the means is also sequential and cumulative. The relationship of the defined objective is first determined with respect to factors in the Programme Domain (i.e. subjected to task-analysis etc) and then with respect to factors in the Teaching Domain. The outcome of Means Analysis may be termed a "defined means".

The process of evaluation may now be restated as the following steps :

(i) To analyse a proposed objective by examining it in conjunction with factors in its own and in superordinate domains : a sequential, cumulative, "upward" process.

(ii) Thus to arrive at a defined objective.

(iii) To examine the defined objective in conjunction with the proposed means : a sequential, cumulative, "downward" process.

(iv) Thus to arrive at a defined means.

The outstanding aspects of the definition of evaluation emerging from the Seminar are :

(i) The need to integrate objectives at different levels

(ii) The need to understand the art and technology of training.

From (i) it is clear that evaluators cannot be regarded as only technicians. Their familiarity with all levels of policy is vital if the educational effect of evaluation is to be maximised.

This point is re-inforced by the word "art" in part (ii). Teaching, learning and training can be systematised only to a certain degree. Furthermore, the systematisation will lead only to simplistic conceptions unless it is set in a genuine understanding of the underlying processes. Models, such as those presented here, checklists of key points in training programmes etc, only go so far. They point to areas for exploration or definition : they do not offer a substitute for the ability to explore and define.

The abilities indicated are formidable if they are assumed to reside within a single individual. The ability to make judgements about a learning process, to relate a programme to the field of training/education policy and provision, to set this within total manpower requirements, to see this as a part of social policy to design appropriate enquiry methods within any of these fields and to apply specialist techniques such as cost-benefit analysis across this spectrum clearly requires a team of evaluators. How many and what their qualifications should be will vary with circumstances, but in general the following fields of expertise would be represented :

(a) Social administration/sociology
(b) Labour economics
(c) Investment appraisal
(d) Training management

(e) Training process consultancy.

In practice two or more of these categories may be collapsed into one, e.g. (a) (b) ; (b) (c) ; (c) (d) ; (d) (e) ... etc. The nature of the problem and the availability of personnel will determine specific cases.

It is possible for such teams to be created ad hoc and to operate successfully, and this has happened in the past. It would be a considerable advantage however if such teams were to be given a degree of permanence which would allow team-integration to develop. With explicit training exercises to this end, it should not be hard to demonstrate improvements such as a greater degree of inter-subjective consistency between teams. At present, there is scarcely any measure of consistency in evaluation. Such data as might be relevant to it, such as that relating to interviewers, academic examiners etc, suggests that the level of consistency is probably low. The decisions taken on the basis of evaluation therefore must be correspondingly doubtful. The use of team exercises, inter-team exercises, the development of working skills and classifications etc. are an immediate possibility. The Seminar has shown that a framework for evaluation can be offered. But the criticism, modification and development of this framework can best come from practical attempts to implement it.

One such attempt has been made by the Commission of the European Communities. In 1974 it established an international team of advisory experts to examine a number of training programmes supported by the European Social Fund. For the first series of projects examined they evaluated the extent to which the training met the objectives set for it. In the current series they are looking at the relationship between the training programme and the overall manpower and socio-economic goals of the country concerned. Apart from the usefulness of the evaluation itself and its importance for the development of the Social Fund the work of the team is generating a transnational understanding of the training problems of the different member states and is establishing a fund of expertise and a measure of team integration despite the varied backgrounds (both nationally and professionally) of its members.

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